neary TECHNOLOGIES

5500906
AUTO - INDEX
SPIN / RELIEF
REEL GRINDER

Patent No. 5,321,912
6,010,394 & 6,290,581

ASSEMBLY
and
SERVICE
MANUAL

WARNING

You must thoroughly read and understand this manual before operating the equipment, paying particular attention to the Warning & Safety instructions.

SAFETY INSTRUCTIONS

Safety Awareness Symbols are inserted into this manual to alert you to possible ***Safety Hazards***. Whenever you see these symbols, follow their instructions.

The ***Warning Symbol*** identifies special instructions or procedures which, if not correctly followed, could result in personal injury.

The ***Caution Symbol*** identifies special instructions or procedures which, if not strictly observed, could result in damage to or destruction of equipment.

1. **KEEP GUARDS IN PLACE** and in working order.

2. **REMOVE WRENCHES AND OTHER TOOLS.**

3. **KEEP WORK AREA CLEAN.**

4. **DON'T USE IN DANGEROUS ENVIRONMENT.** Don't use Grinder in damp or wet locations. Machine is for indoor use only. Keep work area well lit.

5. **KEEP ALL VISITORS AWAY.** All visitors should be kept a safe distance from work area.

6. **MAKE WORK AREA CHILD-PROOF** with padlocks or master switches.

7. **DON'T FORCE THE GRINDER.** It will do the job better and safer if used as specified in this manual.

8. **USE THE RIGHT TOOL.** Don't force the grinder or an attachment to do a job for which it was not designed.

9. **WEAR PROPER APPAREL**. Wear no loose clothing, gloves, neckties, or jewelry which may get caught in moving parts. Nonslip footwear is recommended. Wear protective hair covering to contain long hair.

10. **ALWAYS USE SAFETY GLASSES.**

11. **SECURE YOUR WORK.** Make certain that the cutting unit is securely fastened with the clamps provided before operating.

12. **DON'T OVERREACH.** Keep proper footing and balance at all times.

13. **MAINTAIN GRINDER WITH CARE.** Follow instructions in Service Manual for lubrication and preventive maintenance.

14. **DISCONNECT POWER BEFORE SERVICING,** or when changing the grinding wheel.

15. **REDUCE THE RISK OF UNINTENTIONAL STARTING.** Make sure all switches is **OFF** before plugging in the grinder.

16. **USE RECOMMENDED ACCESSORIES**. Consult the manual for recommended accessories. Using improper accessories may cause risk of personal injury.

17. **CHECK DAMAGED PARTS.** A guard or other part that is damaged or will not perform its intended function should be properly repaired or replaced.

18. **KNOW YOUR EQUIPMENT.** Read this manual carefully. Learn its application and limitations as well as specific potential hazards.

19. **KEEP ALL SAFETY DECALS CLEAN AND LEGIBLE.** If safety decals become damaged or illegible for any reason, replace immediately. Refer to replacement parts illustrations in Service Manual for the proper location and part numbers of safety decals.

20. **DO NOT OPERATE THE GRINDER WHEN UNDER THE INFLUENCE OF DRUGS, ALCOHOL, OR MEDICATION.**

SAFETY INSTRUCTIONS

IMPROPER USE OF GRINDING WHEEL MAY CAUSE BREAKAGE AND SERIOUS INJURY.

Grinding is a safe operation if the few basic rules listed below are followed. These rules are based on material contained in the ANSI B7.1 Safety Code for "Use, Care and Protection of Abrasive Wheels". For your safety, we suggest you benefit from the experience of others and follow these rules.

DO

1. **DO** always **HANDLE AND STORE** wheels in a careful manner.
2. **DO VISUALLY INSPECT** all wheels before mounting for possible damage.
3. **DO CHECK MACHINE SPEED** against the established maximum safe operating speed marked on wheel.
4. **DO CHECK MOUNTING FLANGES** for equal and correct diameter.
5. **DO USE MOUNTING BLOTTERS** when supplied with wheels.
6. **DO** be sure **WORK REST** is properly adjusted.
7. **DO** always **USE A SAFETY GUARD COVERING** at least one-half of the grinding wheel.
8. **DO** allow **NEWLY MOUNTED WHEELS** to run at operating speed, with guard in place, for at least one minute before grinding.
9. **DO** always **WEAR SAFETY GLASSES** or some type of eye protection when grinding.

DON'T

1. **DON'T** use a cracked wheel or one that **HAS BEEN DROPPED** or has become damaged.
2. **DON'T FORCE** a wheel onto the machine **OR ALTER** the size of the mounting hole--if wheel won't fit the machine, get one that will.
3. **DON'T** ever **EXCEED MAXIMUM OPERATING SPEED** established for the wheel.
4. **DON'T** use mounting flanges on which the bearing surfaces **ARE NOT CLEAN, FLAT AND FREE OF BURRS.**
5. **DON'T TIGHTEN** the mounting nut **EXCESSIVELY.**
6. **DON'T** grind on the **SIDE OF THE WHEEL** (see Safety Code B7.2 for exception).
7. **DON'T** start the machine until the **WHEEL GUARD IS IN PLACE.**
8. **DON'T JAM** work into the wheel.
9. **DON'T STAND DIRECTLY IN FRONT** of a grinding wheel whenever a grinder is started.
10. **DON'T FORCE GRINDING** so that motor slows noticeably or work gets hot.

AVOID INHALATION OF DUST generated by grinding and cutting operations. Exposure to dust may cause respiratory ailments. Use approved NIOSH or MSHA respirators, safety glasses or face shields, and protective clothing. Provide adequate ventilation to eliminate dust, or to maintain dust level below the Threshold Limit Value for nuisance dust as classified by OSHA.

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This machine is intended for grinding the reel of reel type mower units <u>ONLY.</u> Any use other than this may cause personal injury and void the warranty.

To assure the quality and safety of your machine and to maintain the warranty, you MUST use original equipment manufactures replacement parts and have any repair work done by a qualified professional.

ALL operators of this equipment must be thoroughly trained BEFORE operating the equipment.

Do not use compressed air to clean grinding dust from the machine. This dust can cause personal injury as well as damage to the grinder. Machine is for indoor use only. Do not use a power washer to clean the machine.

Low Voltage Relay

The grinder is equipped with a low voltage relay which is factory preset at 100 VAC. If the power supply line does not deliver 100 VAC power under load, the relay will open and trip out the starter. If this occurs, your power supply line is inadequate and must be correct before proceeding further with the grinder.

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DAILY MAINTENANCE BY THE OPERATOR

On a daily basis, clean the machine by wiping it off.
On a daily basis, remove all grinding grit from the grinding shaft, traverse shafts, and tooling bar area.
On a daily basis, inspect the machine for loose fasteners or components.
Contact your company's Maintenance Department if damaged or defective parts are found.

DO NOT USE COMPRESSED AIR TO CLEAN
GRINDING DUST FROM GRINDER

SAFETY INSTRUCTIONS

Safety Awareness Symbols are inserted in this manual to alert you to possible Safety Hazards. Whenever you see these symbols, heed their instructions.

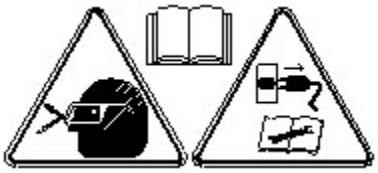
The Warning Symbol identifies special instructions or procedures which, if not correctly followed, could result in personal injury.

The Caution Symbol identifies special instructions or procedures which , if not strictly observed, could result in damage to, or destruction of equipment.

PLEASE TAKE SPECIAL NOTE OF THE FOLLOWING WARNING DECALS LOCATED ON THE FRONT AND SIDES OF THE GRINDER.

Symbol for hearing protection required when operating this machine.

Symbol that operator and people in close proximity must wear respirators or have an adequate ventilation system.



Symbol for Read operators manual, wear safety glasses and disconnect power before servicing.

Symbol to keep visitors a safe distance away from the grinder.

Symbol for sharp object which will cause serious injury.

Symbol identifying a panel, cover, or area as having live electrical components within.

Symbol for minimum safe rated RPM of grinding wheel.

Symbol to keep exposed gasoline or flammables away from the grinder because it operates with a large amount of sparks.

SKILL AND TRAINING REQUIRED FOR SERVICING

This Service Manual is designed for technicians who have the necessary mechanical and electrical knowledge and skills to reliably test and repair the *550* Spin/Relief Grinder. For those without the background, service can be arranged through your local distributor.

This section presumes that you are already familiar with the normal operation of the Grinder. If not, you should read the operators manual, or do the servicing in conjunction with someone who is familiar with its operation.

Persons without the necessary knowledge and skills should not remove the control box cover or attempt any internal troubleshooting, adjustments, or parts replacement.

If you have questions not answered in this manual, please call your distributor. They will contact the manufacturer if necessary.

TORQUE REQUIREMENTS

Throughout this manual we refer to torque requirements as "firmly tighten" or the like. For more specific torque values, refer to the information below.

Bolts Going Into a Nut, or Into a Thread Hole in Steel.
Refer to the table at the right.

Bolts Going Into a Thread Hole In Aluminum
Use the Grade 2 values in the table at the right.

Socket-Head Screws Going Into a Nut or Steel
Use the Grade 8 values in the table at the right.

Machine Screws
No. 6 screws: 11 in.- lbs (0.125kg - m)
No. 8 screws: 20 in. - lbs (0.23 kg - m)
No. 10 screws: 32 in. - lbs (0.37 kg - m)

	GRADE 2 SMOOTH HEAD	GRADE 5 3 MARKS on HEAD	GRADE 8 6 MARKS on HEAD
1/4 In. thread	6 ft-lbs (0.8 kg-m)	9 ft-lbs (1.25 kg-m)	13 ft-lbs (1.8 kg-m)
5/16 In. thread	11 ft-lbs (1.5 kg-m)	18 ft-lbs (2.5 kg-m)	28 ft-lbs (3.9 kg-m)
3/8 In. thread	19 ft-lbs (2.6 kg-m)	31 ft-lbs (4.3 kg-m)	46 ft-lbs (6.4 kg-m)
7/16 In. thread	30 ft-lbs (4.1 kg-m)	50 ft-lbs (6.9 kg-m)	75 ft-lbs (10.4 kg-m)
1/2 In. thread	45 ft-lbs (6.2 kg-m)	75 ft-lbs (10.4 kg-m)	115 ft-lbs (15.9 kg-m)

ASSEMBLY INSTRUCTIONS

Remove the sides, front, and back of the crate. Remove the plastic bag, shrink wrap and bubble wrap. Remove the metal clips that secure the grinder to the crate base. With a fork lift, raise the grinder from the wood base and set it in its final position. See FIG. 22 and 23.

THE UNIT WEIGHS 1240 LBS. (562 kg). TO LIFT, USE POWER EQUIPMENT.

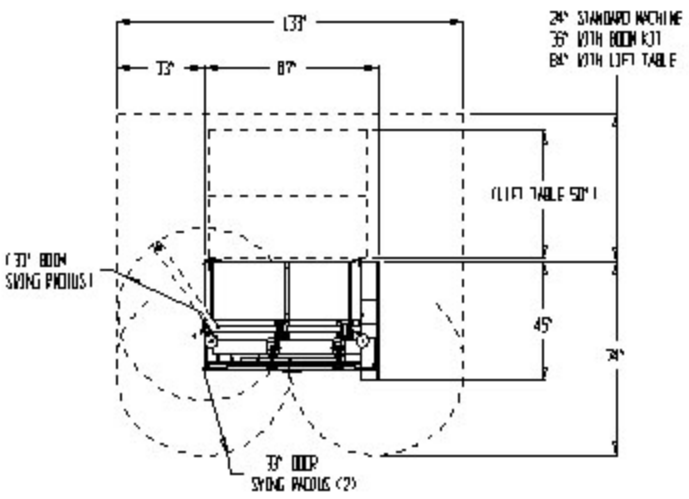


FIG. 22

Remove shipping straps and window protective sheets.

POSITION BASE

The *550* Spin/Relief Grinder will require an operating area of about 150" W x 110" D x 87" H (381 x 279 x 221 cm). The machine operator will operate the unit from the front of the machine. Position the base to allow sufficient operating room in front and to the rear of the machine. See FIG. 22 and 23.

The base should be placed on a relatively level concrete floor, with ample ceiling height to allow for the installation of the unit. Do not place the unit across two concrete slab seams or across a large crack.

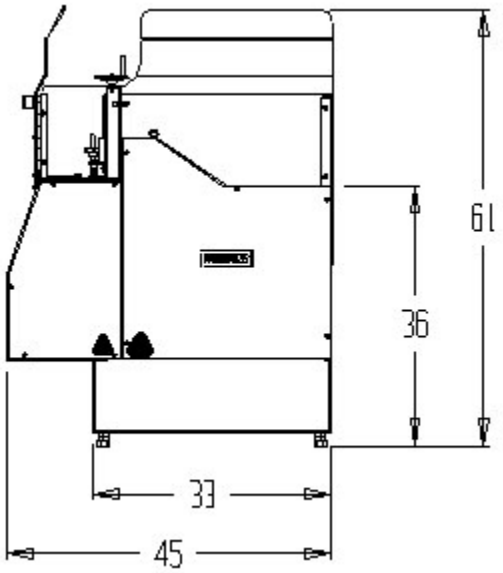
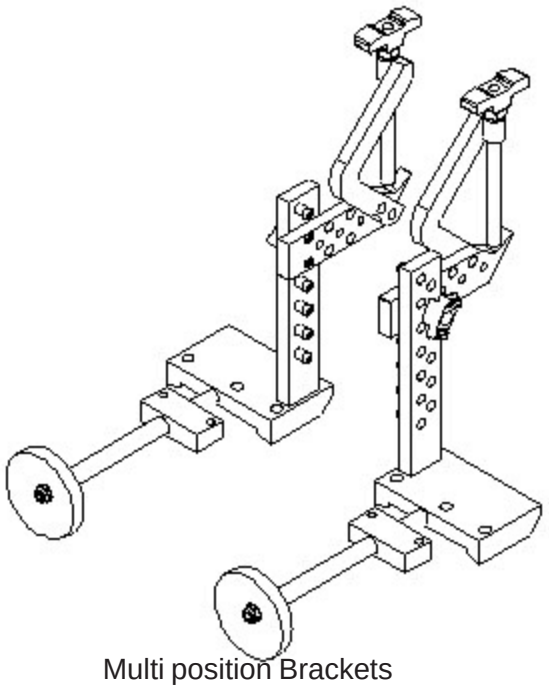


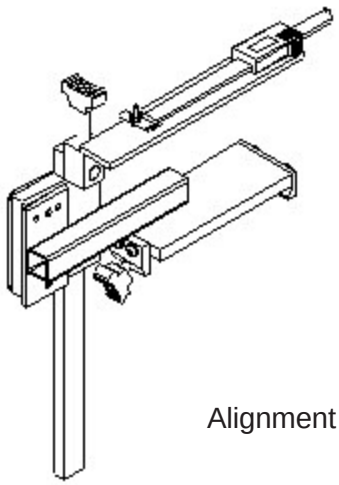
FIG. 23

ASSEMBLY INSTRUCTIONS (Continued)

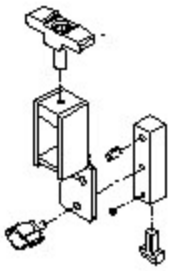
Remove the carton and remove the contents from the carton onto a workbench. The carton includes:



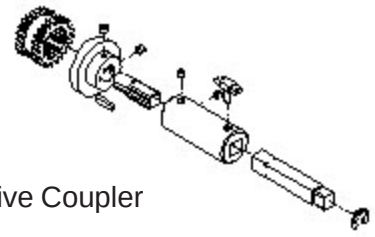
Multi position Brackets



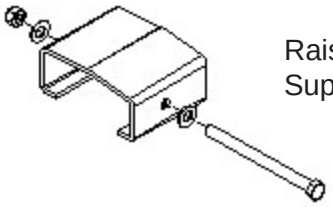
Alignment Gage



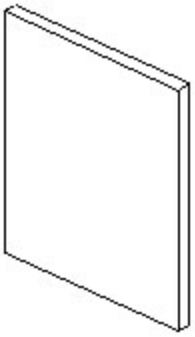
Diamon Dresser



Drive Coupler



Raised Rear Support



Product Packet Assembly (Operators & Assembly Manuals)

Spanner Wrench

LEVEL BASE

Place level on the top of the table and check the levelness of the unit from side to side. Adjust the leveling feet as necessary to bring to level. See FIG. 25.

Place a level across the table from front to rear. Adjust the leveling feet on the end of the machine as necessary to level. See FIG. 26.

When both front to back and side to side leveling procedures have been completed, thread the hex jam nuts up against the nut that is welded to the bottom until they lock into place. Be careful not to move the leveling feet during this process. See FIG. 24. Make certain that all four leveling feet are firmly contacting the floor.

Recheck with level after locking nuts are firmly tightened.

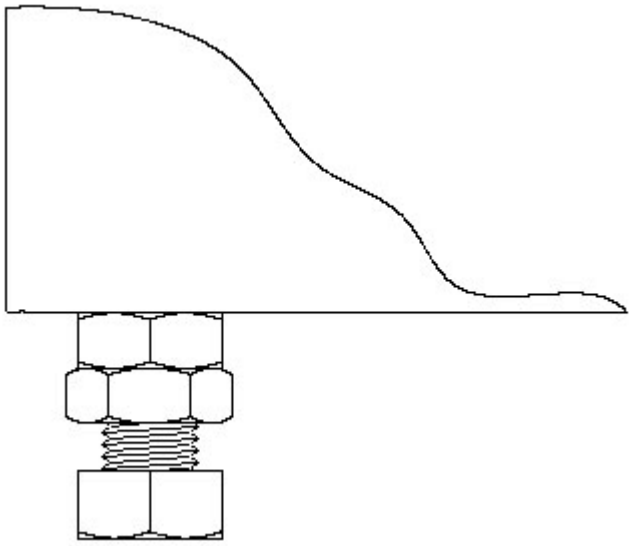


FIG. 25

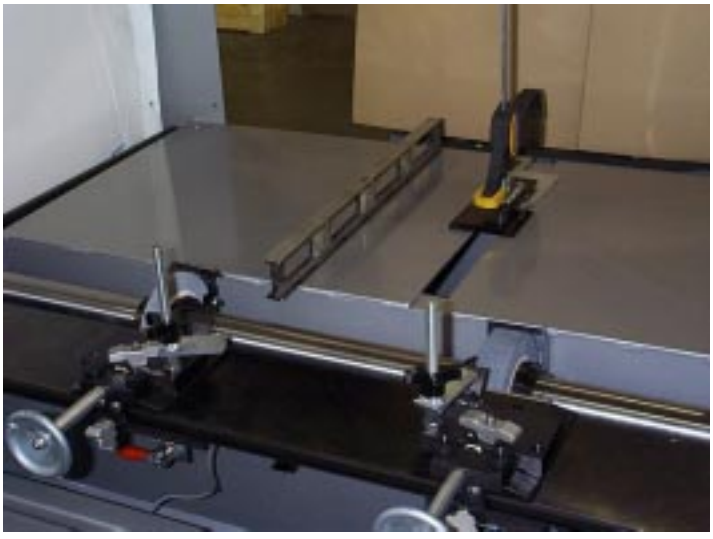


FIG. 26

APPLY POWER

BEFORE YOU APPLY POWER TO THE GRINDER, REFER TO THE "IMPORTANT GROUNDING INSTRUCTIONS".

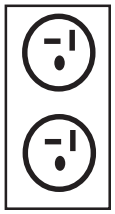


FIG. 27

115 Volt Model Only. Plug the control box power cord into a standard 115V AC 20-amp grounded receptacle. See FIG. 27.

220 Volt Model Only. For 220 Volt Applications order Part No. 5500956, which includes a prewired 2 KVA 220 V step down to 115V 50-60 Hz transformer. See details on Page 11.

IT IS RECOMMENDED THAT THIS SPIN/ RELIEF GRINDER HAS ITS OWN PERMANENT POWER CONNECTION FROM THE POWER DISTRIBUTION PANEL, WITH NO OTHER MAJOR POWER DRAW EQUIPMENT ON THE SAME LINE.

IT IS REQUIRED THAT THE POWER DELIVERED TO THIS GRINDER IS 115 VAC - 20 AMPS. THE TOLERANCE ON THIS POWER REQUIREMENT IS +/- 5%. THEREFORE THE MINIMUM VOLTAGE REQUIREMENT IS 109VAC WITH 20 AMPS. VOLTAGE MUST BE CHECKED WITH ALL EQUIPMENT UNDER LOAD (OPERATING) ON THE CIRCUIT.

DO NOT OPERATE THIS GRINDER WITH AN EXTENSION CORD.

PROPER GROUNDING OF THE RECEPTACLE GROUND IN YOUR BUILDING MUST BE VERIFIED. IMPROPER GROUNDING IN YOUR BUILDING MAY CAUSE THE GRINDER TO MALFUNCTION.

The grinder is equipped with a low voltage relay which is factory preset at 100 VAC. If the power supply line does not deliver 100 VAC power under load, the relay will open and trip out the starter. If this occurs, your power supply line is inadequate and must be correct before proceeding further with the grinder.

FOR 20 AMP RATED LARGE MACHINES

Below is a list of required wire size in your building.

For 0 to 40 Feet from panel to receptacle = Use 12 Ga. Wire.
For 40 to 60 Feet from panel to receptacle = Use 10 Ga. Wire.
For 60 to 100 Feet from panel to receptacle = Use 8 Ga. Wire.
For 100 to 160 Feet from panel to receptacle = Use 6 Ga. Wire.

For 0 to 12 Meters from panel to receptacle = Use 4.0mm Wire.
For 12 to 18 Meters from panel to receptacle = Use 6.0mm Wire.
For 18 to 30 Meters from panel to receptacle = Use 10.0mm Wire.
For 30 to 48 Meters from panel to receptacle = Use 16.0mm Wire.

ASSEMBLY INSTRUCTIONS (Continued)

FOR 220 V 50 or 60Hz applications Product No. 5500956 should be ordered.

5500956 includes a 2 KVA 220V, step down to 115 V 50-60 Hz transformer.

The transformer wiring diagram is shown in FIG. 28.

The power cord has no connector. A connector which is appropriate for your locality and 220 volt, 10 amp application should be installed.

USE ONLY A QUALIFIED ELECTRICIAN TO COMPLETE THE INSTALLATION.

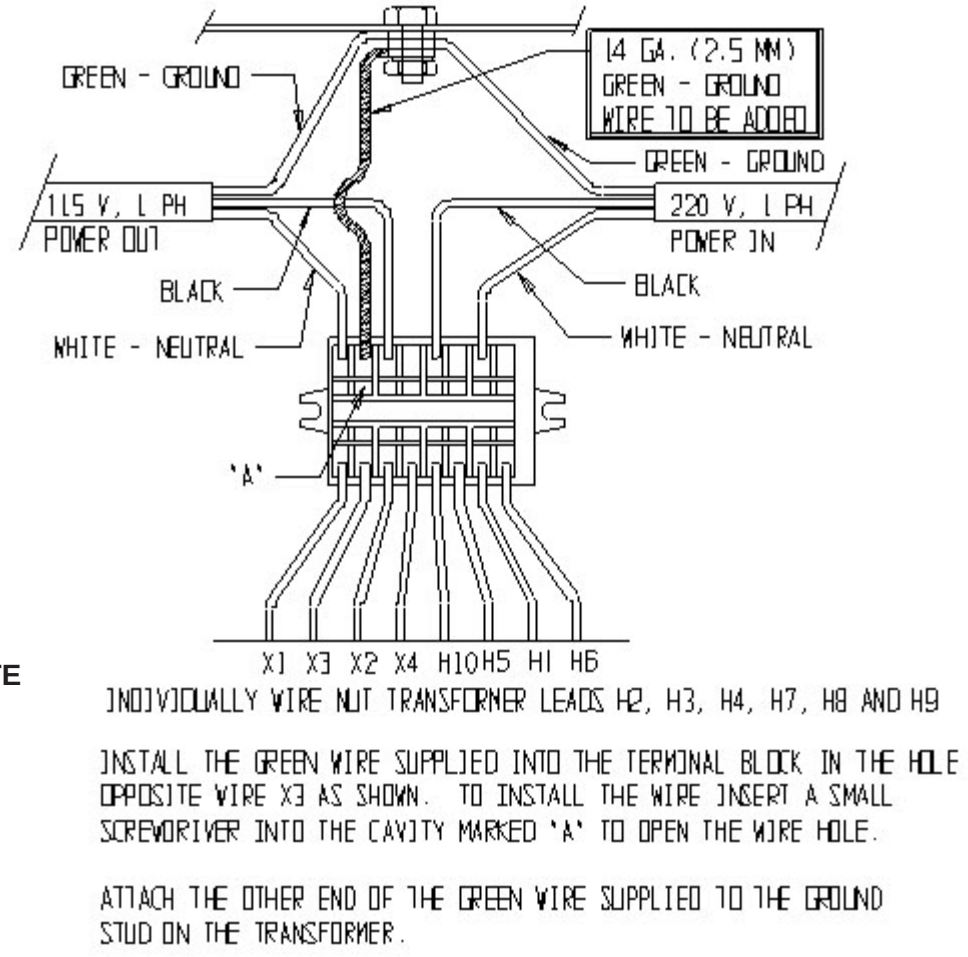

GREEN - GROUND
14 GA. (2.5 MM)
GREEN - GROUND
WIRE TO BE ADDED
GREEN - GROUND
115 V, 1 PH
POWER OUT
220 V, 1 PH
POWER IN
BLACK
BLACK
WHITE - NEUTRAL
WHITE - NEUTRAL
'A'
X1 X3 X2 X4 H10 H5 H1 H6
INDIVIDUALLY WIRE NUT TRANSFORMER LEADS H2, H3, H4, H7, H8 AND H9
INSTALL THE GREEN WIRE SUPPLIED INTO THE TERMINAL BLOCK IN THE HOLE OPPOSITE WIRE X3 AS SHOWN. TO INSTALL THE WIRE INSERT A SMALL SCREWDRIVER INTO THE CAVITY MARKED 'A' TO OPEN THE WIRE HOLE.
ATTACH THE OTHER END OF THE GREEN WIRE SUPPLIED TO THE GROUND STUD ON THE TRANSFORMER.

FIG. 28

IMPORTANT GROUNDING INSTRUCTIONS

In case of a malfunction or breakdown, grounding reduces the risk of electrical shock by providing a path of least resistance for electrical current.

This Grinder has an electrical cord with an equipment grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded according to all local or other appropriate electrical codes and ordinances.

Before plugging in the Grinder, make sure it will be connected to a supply circuit protected by a properly sized circuit breaker or fuse.

Never modify the plug provided with the machine--if it won't fit the outlet, have a proper outlet and circuit installed by a qualified electrician.

ALWAYS PROVIDE A PROPER ELECTRICAL GROUND FOR YOUR MACHINE. AN IMPROPER CONNECTION CAN CAUSE A DANGEROUS ELECTRICAL SHOCK. IF YOU ARE UNSURE OF THE PROPER ELECTRICAL GROUNDING PROCEDURE, CONTACT A QUALIFIED ELECTRICIAN.

INSTALLATION OF OPTIONAL WINCH AND BOOM KIT 55522

If you purchased the optoinal winch and boom kit (55522) you will need to assemble it to the grinder. First remove the left side polycarbonate guarding and save the fasteners to use on the new guarding. Position the boom base on the left side so that the mounting brackets line up with the holes on the side of the frame. Use the 1/2 inch bolts and lock washers to fasten the base to the frame. Position the new guarding into place and use the remaining fasteners and the old fasteners to mount the new guarding.

Place the boom and winch assembly into the base and attach the spreader bar assembly. Remove the rubber grommet from the old guarding and place in the new guarding.

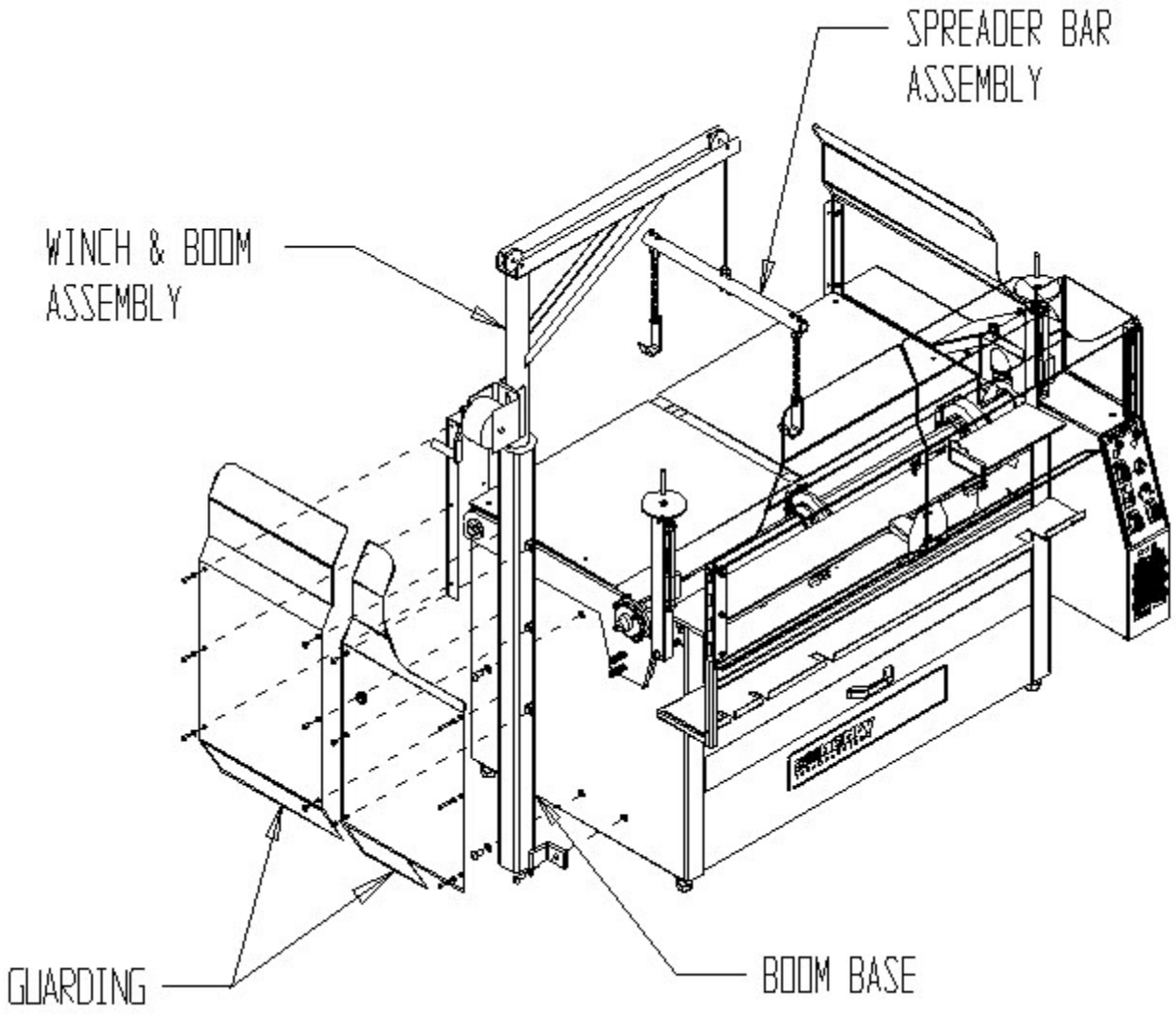


FIG. 29

PERIODIC MAINTENANCE

DAILY MAINTENANCE IS SPECIFIED ON PAGE 4 OF THE OPERATOR'S MANUAL, AND IS TO BE PERFORMED BY THE OPERATOR.

LISTED BELOW ARE PERIODIC MAINTENANCE ITEMS TO BE PERFORMED BY YOUR COMPANY'S MAINTENANCE DEPARTMENT:

1. Clean the dust tray located at the lower front of the machine monthly using a vacuum or by removing it. Pull the tray out until the back of the tray is even with the front of the frame and vacuum it out. To remove continue to pull straight out until the tray is free.

USE CAUTION WHEN PULLING THE TRAY OUT AS THERE IS NO MECHANICAL STOP. WHEN REMOVING TRAY PULL STRAGHT OUT AND SUPPORT IT TO PREVENT DUMPING.

2. Inspect the Poly-V belt on the grinding motor for cracking and make any necessary adjustments every three months.

3. Wipe and relube with never-seez, the horizontal adjustment shafts located on the tooling every six months.

4. Wipe and relube with never-seez, the vertical adjustment shafts every six months. Run the arms up and down to coat the working areas of the shaft.

5. Inspect the traverse cog belt for cracking and defects every three months. Remove any grit or dust that may affect the function of the belt. Adjust tension if necessary per procedures called out in the adjustment section.

6. Lubricate grinding shaft bearings with one shot of grease once every 2 years.

DO NOT GREASE BEARINGS FOR FIRST 2 YEARS. THEY ARE GREASED AT THE FACTORY AND GREASING WILL CAUSE THE BEARINGS TO OVERHEAT AND FAIL PREMATURELY.

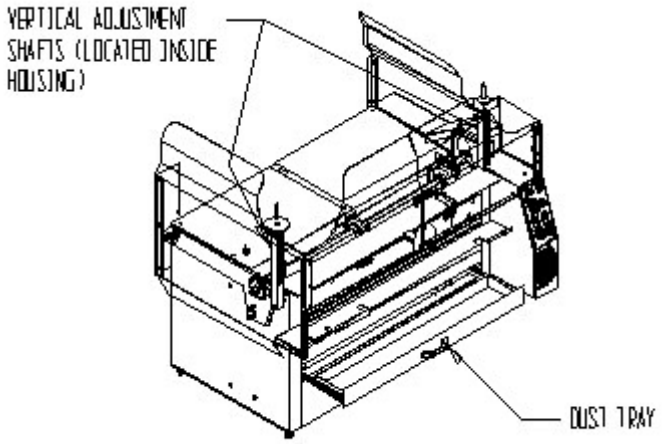


FIG. 30

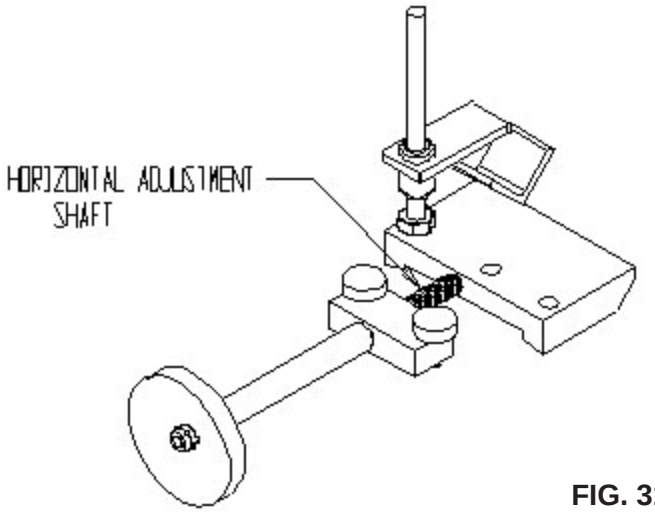


FIG. 31

LUBRICATION

LUBRICATION OF GRINDING SHAFT AND LINEAR BEARINGS

STEP 1 – Thoroughly clean all three shafts.

STEP 2 – Flood spray all three shafts with WD40 until the lubricant is dripping off the shafts. Then run the grinding head assemblies back and forth through their full range of travel. This will remove the dust and deposits from inside the wheel flanges. Repeat if necessary until lubrication is clear of deposits. Clean keyways located on the grinding shaft with soft brush.

STEP 3 – With a clean rag, wipe off the excess amount of lubricant from the shafts. Run the grinding assemblies through their range of travel and wipe the shafts after each traverse. Repeat until the shafts are dry to the feel. This completes the lubrication process.

If the unit will be shut down for an extended period of time, more than four weeks, then the shafts and other appropriate parts of the unit should be flooded with lubricant and that lubricant left in place until the unit is brought back into service. When the unit is brought back into service the full lubrication procedure as stated above should be repeated.

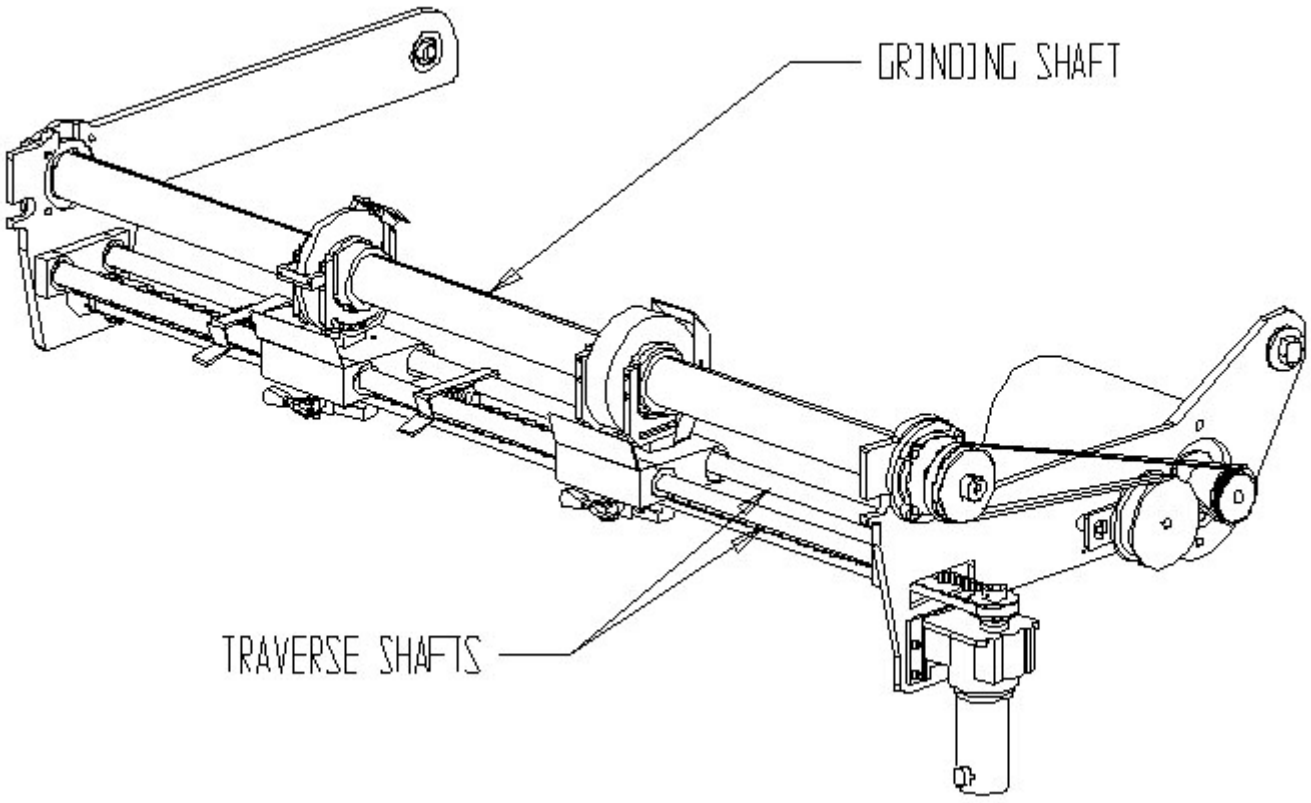


FIG. 32

MAINTENANCE

REPLACEMENT OF GRINDING WHEEL

To replace the wheel first open the Polycarbonate guarding located on the left side of the machine. Now, lower the left side of the grinding shaft and raise the right side. Loosen the two bolts that hold the bearings on the relief hub so that that bearings fall away from the wheel and hub (toward the front of the machine). Press the index finger down and the wheel and hub assembly should move freely to the right. Loosen the setscrews on the bearing and remove the screws that hold the bearing to the left arm.

Remove the bearing and lift the left end of the grinding shaft. Slide the grinding wheel hub assembly(s) off the shaft taking note of what side the nut is on. Using the spanner wrench (50014) remove and replace the grinding wheel(s) on the hub assembly.

NOTE: THE RELIEF HUB HAS A LEFT HAND THREAD FOR THE NUT. THE SPIN HUB HAS A RIGHT HAND THREAD.

Place the ginding wheel hub assembly(s) back on the grinding shaft and make sure the spin hub is located between the drive yoke assembly and the relief hub is to the right of the drive assembly.

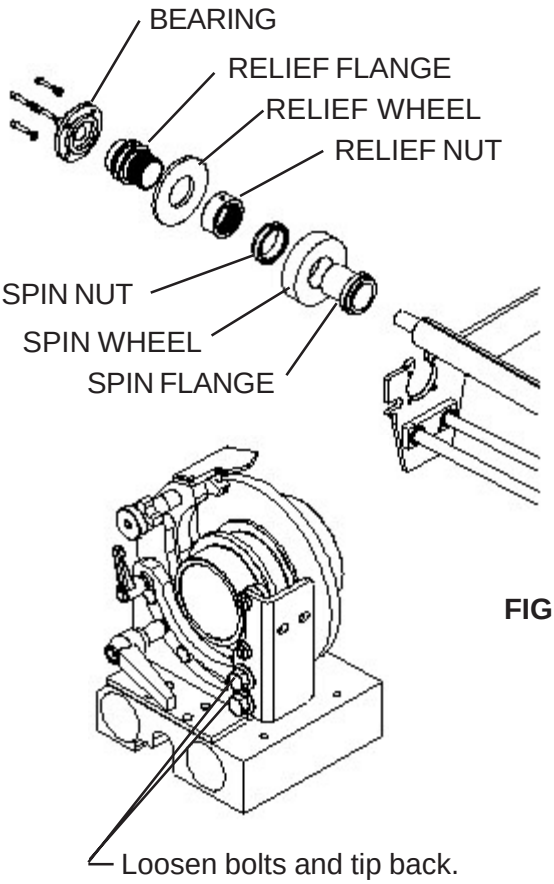


FIG. 33

MAKE SURE THE WHEEL(S) IS PLACED ON THE SHAFT WITH THE SAME ORIENTATION AS SHOWN. FAILURE TO INSTALL CORRECTLY WILL CAUSE THE WHEEL NUT TO LOOSEN. (THE NUT ON THE RELIEF HUB SHOULD BE TO THE RIGHT & THE NUT ON THE SPIN HUB SHOULD BE TO THE LEFT.)

Reinstall the bearing on the left side of the shaft making sure to fit the pilot on the bearing into arm. Tighten mounting screws, and tighten the setscrews to the shaft. Close and tighten polycarbonate guard. Move bearing support back in place - see relief hub bearing adjustment complete details.

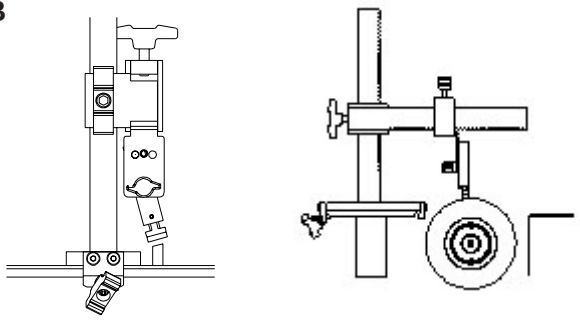


FIG. 34

WHEEL DRESSING

If the grinding wheel becomes loaded with material it may be necessary to dress the wheel. The 550 is supplied with a diamond dresser. To use, place the dresser on the spin drive horizontal arm in the area where the wheel is to be dressed. Adjust the dresser to the appropriate position and angle. Raise the grinding wheel so it is nearly touching the dresser.

For dressing the spin grinding wheel, put the dresser in the straight position. Close the doors and infeed the spin grinding wheel into the dresser and then move the grinding wheel side to side against the dresser which will dress the full face of the wheel.

For dressing the relief wheel, put the dresser at the correct angle for normal helix reel or reverse helix reel. See pages 24 and 25 of the Operators Manual. Close the doors and infeed the relief grinding wheel into the dresser. Do Not move the grinding wheel from side to side.

MAINTENANCE (CONTINUED)

GRINDING MOTOR BELT REPLACEMENT/ ALIGNMENT

To replace or inspect the grinding motor belt, remove the rear side panel. To remove the belt, pull down on the tensioner pulley.

For the belt to function properly the grinding shaft pulley and the grinding motor pulley must be in line with the tensioner pulley. To adjust the pulley position loosen the setscrews on the pulley. Locate the belt in the center of the idler pulley. Measure from the arm to the edge of the belt at the idler pulley. Adjust the two other pulley's until the same measurement is achieved and tighten the pulley setscrews.

Before reinstalling the rear panel, run the grind motor to assure that the belt is not misaligned. The belt will walk off the pulley if the system is not aligned properly.

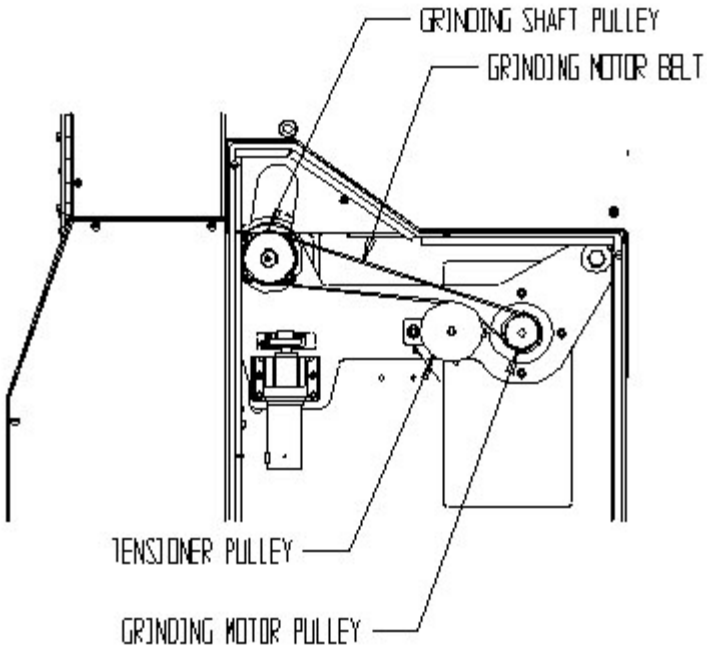


FIG. 35

TRAVERSE BELT REPLACEMENT

To replace the traverse belt first loosen the nuts on the left side pulley that are used to tension the belt. Remove the right side rear side panel. Loosen the screws holding the traverse motor and tilt the bottom of the motor out releasing any remaining tension on the belt. On the left side remove the nut from the bottom belt tensioning screw, this will allow the belt to be removed.

Place a new belt on the left pulley making sure it is seated properly in the cogged teeth and replace the locknut. Feed the new belt throught the slot on the right arm and place on motor pulley. Use the motor as a lever to apply tension to the new belt. Tighten motor screws and adjust the tension in the belt as specified in the BELT TENSION section. Adjust the height of the motor pulley if necessary so the belt is located in the center of the traverse belt clamp.

Test the traverse motor and replace the rear side panel.

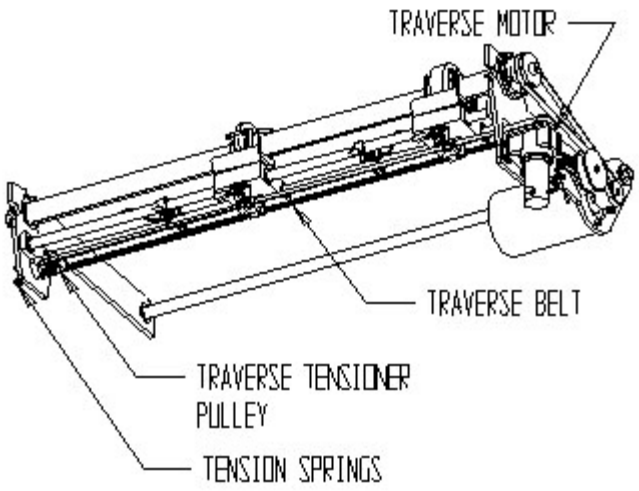


FIG. 36

TRAVERSE SHAFT/LINEAR BEARING REPLACEMENT

Remove the left side guarding. Then remove the grinding shaft by removing the left side bearing and loosening the setscrews on the right side bearing. Also remove the traverse belt.

To remove the traverse shafts first lower the grinding shaft so that it is in in's lowest position. Then remove the left side arm.

To remove the left arm, remove the bolt at the rear of the machine. (It may be necessary to clamp onto the shaft that the bolt is screwed into so that it does not spin.) After removing the bolt, pull the arm off the rear shaft. Remove the front of the arm from the vertical adjuster housing, pull the arm straight off the traverse shafts. (Caution should be used as the shafts may come out of the right side arm.)

Slide the grinding head assemblies off the traverse shafts.

Replace the shafts if necessary or press the bearings out of the bearing housings and replace with new bearings and seals. (Two bearings go in the front and 1 in the rear of the housing).

Clean the 2 spherical bearings in the arm and place the traverse shaft into the right arm. Replace the grinding head assemblies (spin first). Clean the bearing in the left arm and slide onto traverse shaft. (Note: The sperical bearing in the arm has to be lined up with the shafts for the shafts to slide into the bearings.) Replace and tighten items in the opposite order of removal. Make sure the wheels are properly located in the correct grinding head assembly with the nut side of the wheel toward the left side of the machine (see Replacement of Grinding Wheel.)

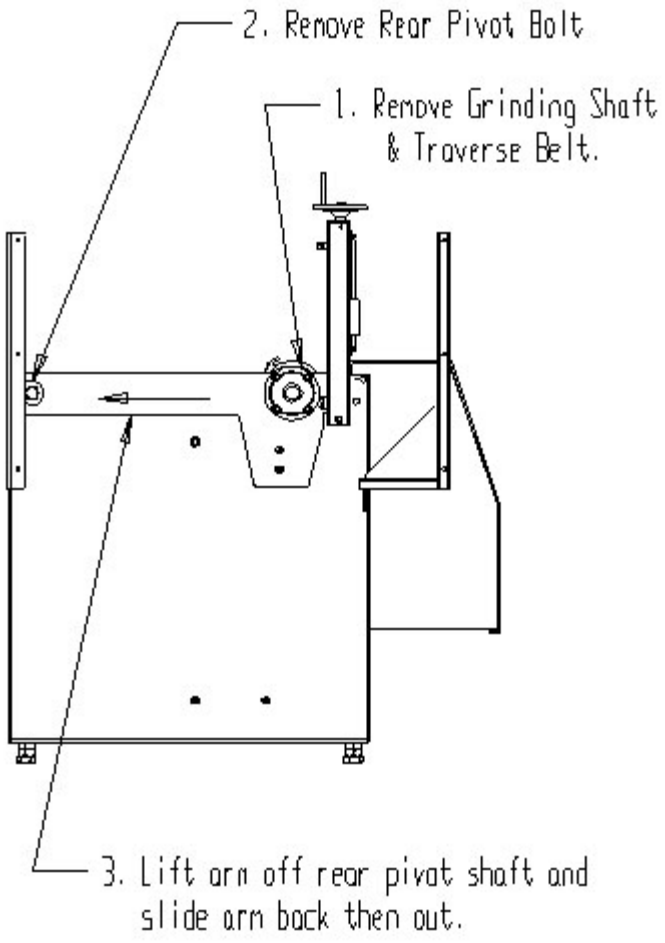


Fig. 37

CLEANING AND MAINTENANCE GUIDELINES FOR POLYCARBONATE WINDOWS

Cleaning Instructions

DO NOT USE GASOLINE
Adherence to regular and proper cleaning procedures is recommended to preserve appearance and performance.

Washing to Minimize Scratching

Wash polycarbonate windows with a mild, liquid dish washing detergent and lukewarm water, using a clean, soft sponge or a soft cloth. Rinse well with clean water. Dry thoroughly with a moist cellulose sponge to prevent water spots. Do not scrub or use brushes on these windows. Also do not use butyl cellosolve in direct sunlight.

Fresh paint splashes and grease can be removed easily before drying by rubbing lightly with a food grade VM&P naptha or isopropyl alcohol. Afterward, a warm final wash should be made, using mild, liquid dish washing detergent solution and ending with a thorough rinsing with clean water.

Minimizing Hairline Scratches

Scratches and minor abrasions can be minimized by using a mild automobile polish. Three such products that tend to polish and fill scratches are Johnson Paste Wax, Novus Plastic Polish #1 and #2, and Mirror Glaze plastic polish (M. G. M10). It is suggested that a test be made on a corner of the polycarbonate window with the product selected following the polish manufacturer's instructions.

Some Important "DON'TS"

DO NOT use abrasive or highly alkaline cleaners on the polycarbonate windows.

NEVER scrape polycarbonate windows with squeegees, razor blades or other sharp instruments.

Benzene, gasoline, acetone or carbon tetrachloride should **NEVER** be used on polycarbonate windows.

DO NOT clean polycarbonate windows in hot sun or at elevated temperatures.

Graffiti Removal

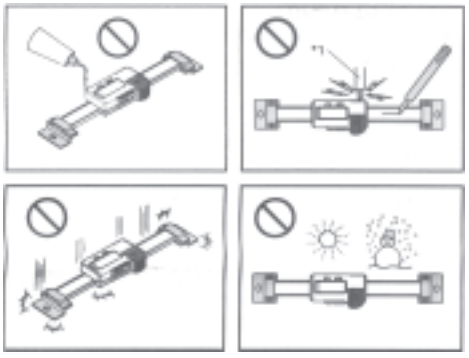
Butyl cellosolve, (for removal of paints, marking pen inks, lipstick, etc.)

The use of masking tape adhesive tape or lint removal tools works well for lifting off old weathered paints.

To remove labels, stickers, etc., the use of kerosene, VM&P naptha or petroleum spirits is generally effective. When the solvent will not penetrate sticker material, apply heat (hair dryer) to soften the adhesive and promote removal. **GASOLINE SHOULD NOT BE USED!**

MAINTENANCE (Continued)

DIGITAL GAGE



Important

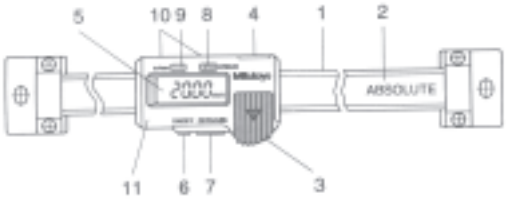
Do not mark the scale unit with and electric engraver or scratch the scale.

Always use an SR44 battery (silver oxide cell)

If the scale will not be used for more than three months, remove the battery and store it properly. Otherwise, leakage, if any, from the battery may damage the unit.

Description of Parts

1. Beam
2. Main Scale
3. Battery compartment
4. Outp Connection
5. Display
6. ON/OFF Power
7. ZERO/ABS switch
8. Origin Switch
9. Inch/mm Switch
10. Tapped hole
11. Slider

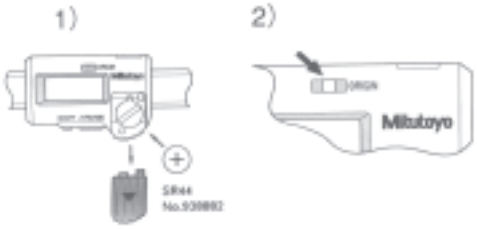


Battery Installation and Origin Setting

Set the origin of the scale after installing the battery. Otherwise, the error sign("E" at the least significant digit) may appear, resulting in incorrect measurements.

1) To install the battery, remove the compartment lid and install the SR44 battery with its positive side facing up. After the battery is installed, set the origin.

2) To set the origin, move the slider to an area you wish to set as your origin. Turn the power on. Hold the ORIGIN switch down for more than one second. The "0.00" display appears, indication Origin setting is complete. The origin will be retained even if the power is turned off.



Incremental (INC) & Absolute (ABS) mode

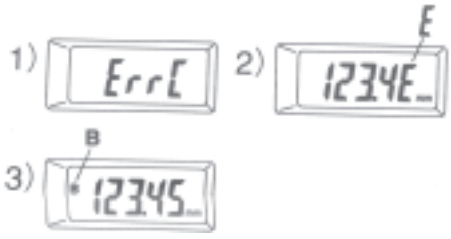
The LCD will dispay measurements from the origin when turned on (ABS mode). To set the origin see above. The display can be set to zero at any desired position by pressing the ZERO/ ABS switch. INC indicator will apper in the display (INC mode), permitting measurements from this zero point. To return to the ABS mode hold the ZERO/ABS button form more than 2 seconds.

Error Symptoms & Remedies

u u **ERRC and display flickering:** Occurs when the scale surface is stained. Clean the scale surface and coat a thin film of low viscosity oil to keep out moisture.

u u **E in the least significant digit:** This occurs when the slider is moved too quickly, but it does not affect the measurement. If it stays on when the slider stops, the scale surface is probably stained. If this is the case, take remedies as for ERRC.

u u **B indication:** Battery voltage is low. Replace the battery as soon as possible.



ADJUSTMENTS

PROXIMITY SWITCH

For the proximity switch to perform properly and reverse the direction of the grinding head assemb the sensor end of the prox must face toward the head assembly that is in use and must be mounte such that it is located past the edge of the prox holder.

NOTE: The light on the proximity switch activates when metal is approximately 3/16" [4.8 mm] from front of proximity switch.

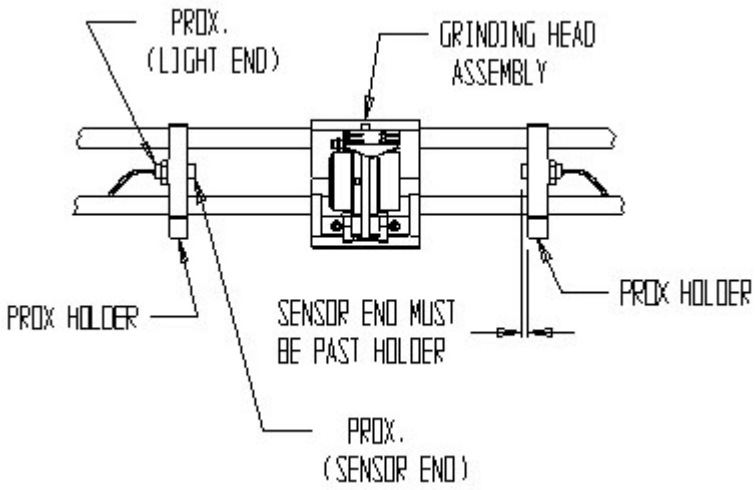


FIG. 38

VERTICAL INFEED SHAFT DRAG

If the grinding shaft tends to walk during grinding, the drag on the vertical adjusters needs to be increased. To increase the drag in the vertical adjustment shafts, tighten the setscrew on the back of the vertical adjustment housing.

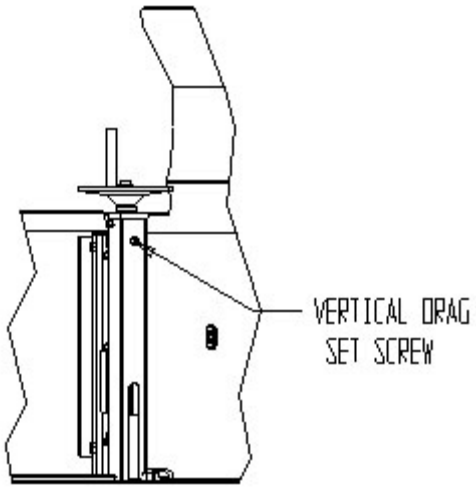


FIG. 39

TRAVERSE BELT TENSION

To adjust the tension on the traverse belt, tighten the screws and nuts located to the left side of the traverse belt to a minimum of 1.75" [44 mm]. The traverse belt should be level when adjusting the belt tension.

DO NOT OVERTIGHTEN. OVERTIGHTENING COULD DAMAGE THE BELT OR TRAVERSE DRIVE SYSTEM.

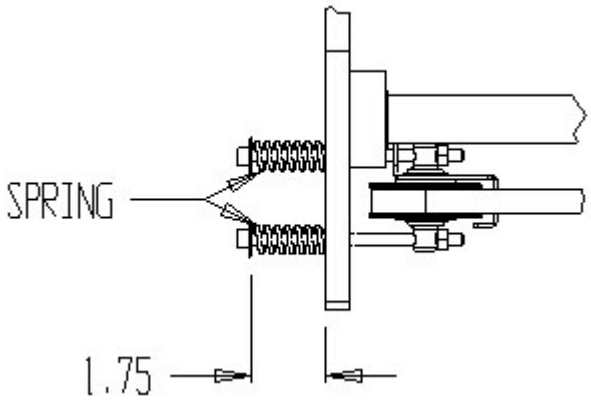


FIG. 40

TRAVERSE CLAMP FORCE

If the traverse clamp is slipping during regular operation it may be necessary to tighten the clamp. To tighten, loosen the jam nut and screw the tip out. Move the traverse belt out of the way and verify the clamped distance from the tip to the clamping block (shoe). Jam the nut against the clamp being careful not to move the tip.

The bracket that supports the clamp is also equpped with slots if further adjustments need to be made. To move the bracket loosen the two screws that are holding it in place and slide forward or back. Retighten the screws and make sure they are tight or the bracket will move during clamping. Check the tip distance and make any necessary adjustments.

THE TIP HAS BEEN FACTORY SET SO THAT IT WILL SLIP IF THE GRINDING HEAD ASSEMBLY COMES IN CONTACT WITH SOMETHING. CAUTION SHOULD BE USED AS ADJUSTING THE TIP WILL AFFECT THE SLIP LOAD AND COULD DAMAGE THE CLAMP TIP, BELT OR TRAVERSE DRIVE SYSTEM.

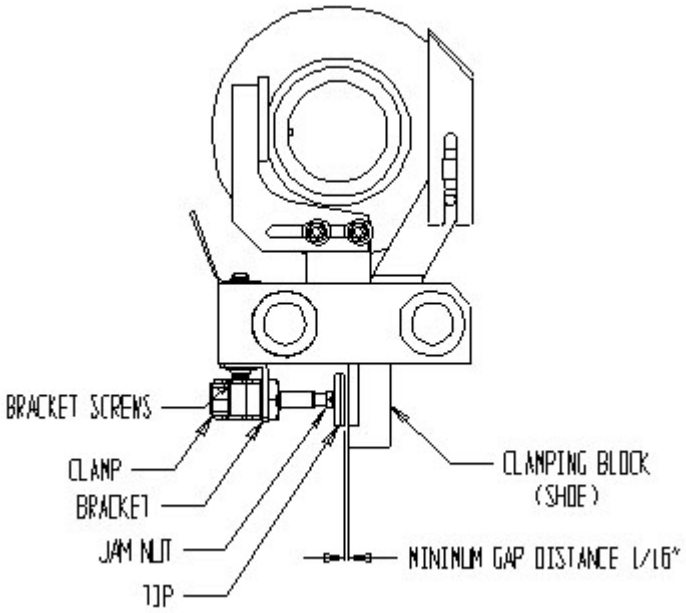


FIG. 41

SPIN GRINDING HEAD WEAR PADS

The bronze wear pads used to move the spin wheel will wear and may need to be adjusted or replaced.

Replace or flip the pads when they wear to within a 1/16" [1.6 mm] of the screws. To accomplish the best fit, the holes in the pads are offset. When installing new pads flip or rotate the pads until Gap 2 is as small as possible without the pads pinching the wheel.

On the spin grinding head assembly, the pads can be adjusted in and out by loosening the screws located on the sides of the yokes. Gap 1 should be adjusted to about 1/16" [1.6 mm].

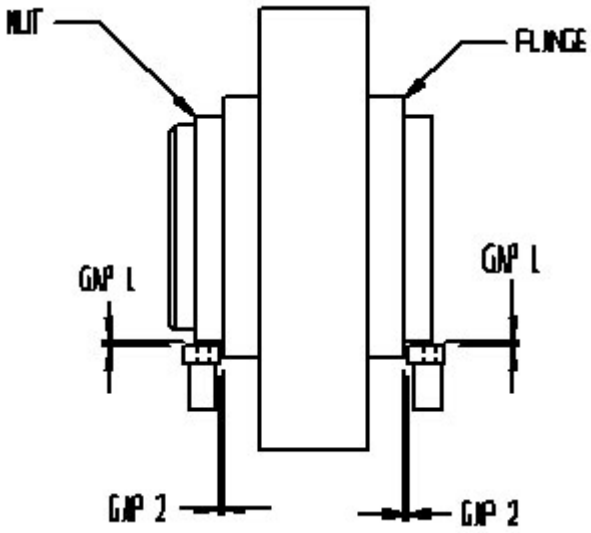


FIG. 42

SAFETY SWITCH ALIGNMENT/REPLACEMENT

The safety switch located on the right guard door must line up properly with the key located on the opposite door or the grinder will not function.

The switch and key must be within 1/4" and the targets on the switches must line up in order for the switch to function properly.

The switch and key are attached to the guarding using a "Torx" style tamper resistant screws.

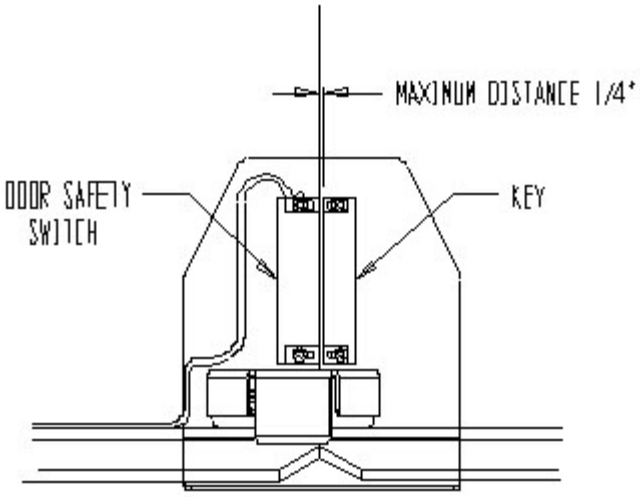
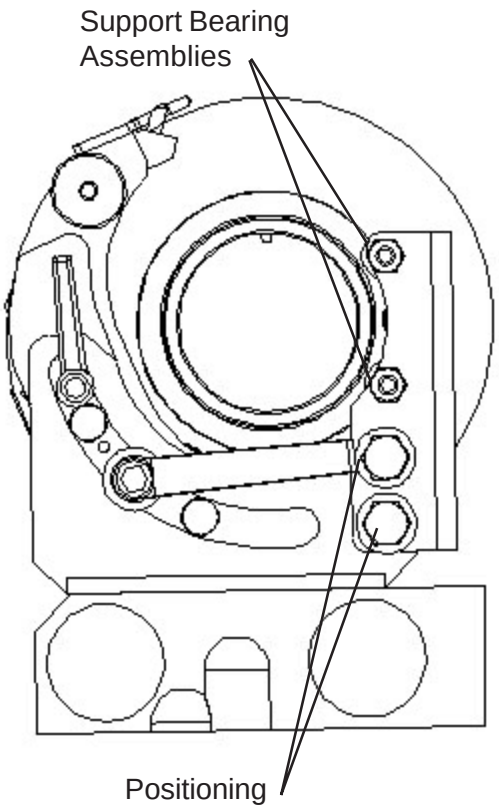


FIG. 43

RELIEF GRINDING HEAD BEARING ADJUSTMENTS

It may be necessary to adjust the guide bearings on the relief head. To adjust the position of the support bearings, loosen the two positioning bolts located on the side of the support assembly. Press on the support assembly until both support bearing assemblies are touching the hub. Hold the support in place with the bearing assemblies touching the hub and tighten the two bolts positioning bolts. Check to see if both bearing assemblies are touching or have minimal clearance to the hub by rotating the grinding shaft.

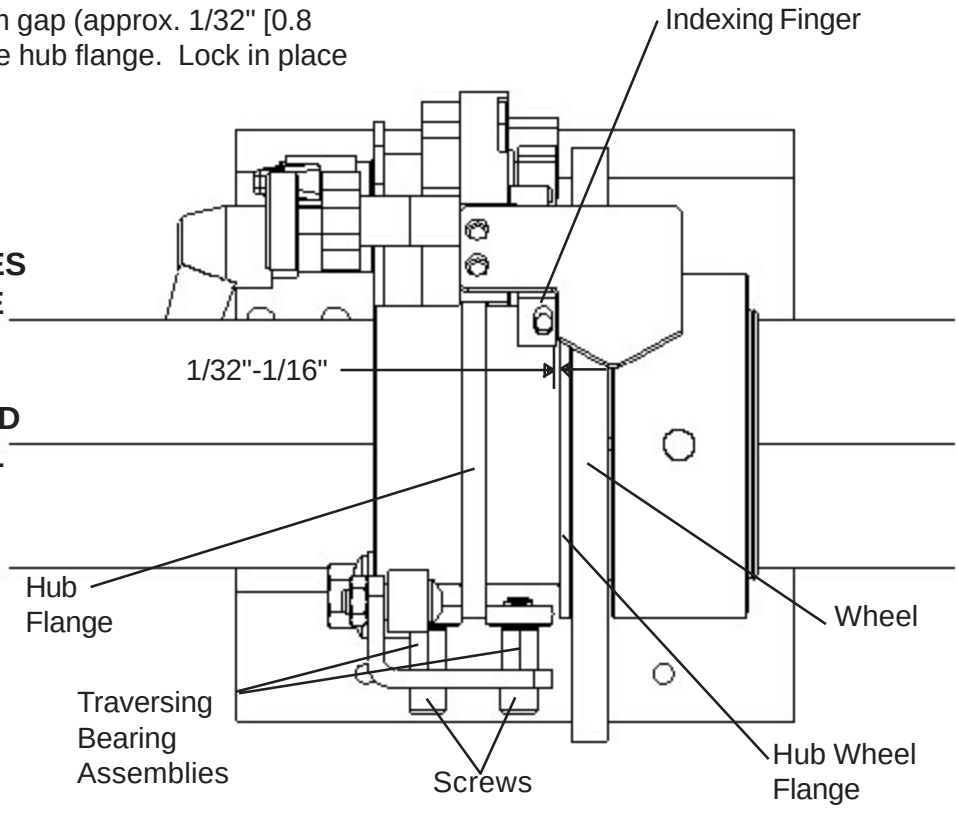


NOTE: EXCESSIVE PRELOAD OF THE BEARING ASSEMBLIES ON THE HUB CAN CAUSE THE BEARINGS TO WEAR QUICKER AND COULD CAUSE THEM TO FAIL PREMATURELY.

To adjust the traversing bearing assemblies use an allen wrench and 3/8" wrench. Use the allen wrench to loosen the screws while using the 3/8" wrench to hold the bearing assembly shaft. After loosening the bearing assemblies push them away from the hub flange. Now Position the hub so there is 1/32"-1/16" [0.8-1.6 mm] clearance between the indexing finger and the hub wheel flange. Now bring the LEFT traversing bearing assembly in until it just contacts the hub flange. Lock this bearing in place by tightening the screw. Press on the wheel so that the hub flange is against the left traversing bearing and verify the clearance of the indexing finger to the wheel flange. Now bring the Right traversing bearing in until there is a minimum gap (approx. 1/32" [0.8 mm]) between the bearing and the hub flange. Lock in place by tighten the screw. Check to

assemblies operate freely and

NOTE: EXCESSIVE PRELOAD OF THE BEARING ASSEMBLIES ON THE HUB FLANGE CAN CAUSE THE BEARINGS TO WEAR QUICKER AND COULD CAUSE THEM TO FAIL PREMATURELY.



CONTROL BOARD POTENTIOMETER ADJUSTMENTS

POTENTIOMETER ADJUSTMENTS TRAVERSE DRIVE CONTROL (TDC)

Min. Speed--Factory set at full (CCW) 8:30. Do not change this setting.

(Right Traverse) Forward Torque--Factory set at full (CW) 4:30. Do not change this setting.

(Left Traverse) Reverse Torque--Factory set at full (CW) 4:30. Do not change this setting.

IR COMP--Factory set to 9:00. IR COMP is current (I) resistance (R) compensation (COMP). IR COMP adjusts the output voltage of the drive which balances load to motor RPM. Regulation of a traverse motor may be improved by slight adjustment of the IR COMP pot clockwise from its factory-set position. Overcompensation causes the motor to oscillate or to increase speed when fully loaded. If you reach such a point, turn the IR COMP pot counterclockwise until the symptoms disappear.

Max. Speed--Set at 3:30 for maximum voltage of 90 Volts DC to the traverse motor. When voltage is above 90 volts DC, the traverse motor will start to pulsate and not run smoothly.

(Right Traverse) Forward Acceleration--Factory set at full (CCW) 8:30. Do not change this setting.

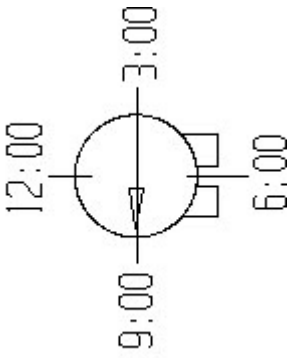
(Left Traverse) Reverse Acceleration--Factory set at full (CCW) 8:30. Do not change this setting.

(DB) Dead Band is the potentiometer setting for the 50 or 60 Hz cycle control. Factory set to 9:00, works for both 50 and 60 Hz. Do not change this setting.

Calibrating the **DWELL TIME** rotary DIP switch adjusts the amount of time the process remains in the stop position after a limit switch is actuated. The **DWELL TIME** range is adjustable from 0-4 seconds. A DIP switch setting of 0 sets the **DWELL TIME** to 0 seconds, while a setting of 9 sets the **DWELL TIME** to 4.5 seconds. Dwell time is preset to #4 setting for a 2 second dwell time when reversing at each end of stroke. A setting of 6, sets the dwell time at 3 seconds, etc.

Diagnostic LED's indicate the function that is currently being performed:

POWER indicates that AC power is being applied to the control.
FORWARD indicates that the process is running in the forward direction (traversing left).
REVERSE indicates that the process is running in the reverse direction (traversing right).
PROX 1 FWD LIMIT lights when the forward limit switch is actuated (left prox.).
PROX 2 REV LIMIT lights when the reverse limit switch is actuated (right prox.).
DWELL lights when the process remains stopped after a proximity switch is actuated.



Potentiometer Clock Orientation

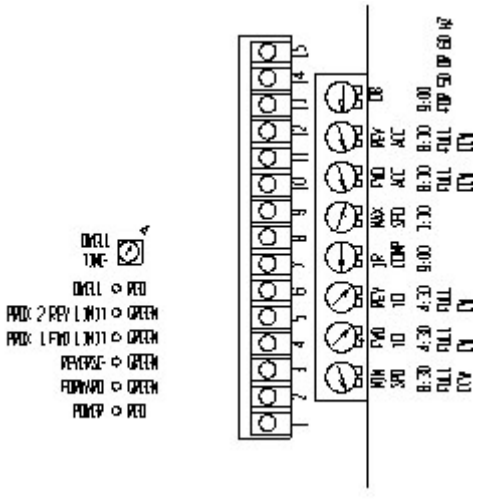


FIG. 44

CONTROL BOARD POTENTIOMETER ADJUSTMENTS (Continued)

SPIN DRIVE CONTROL BOARD (SDC)

The Spin Drive Control Board has three potentiometers on the lower board and two potentiometers on the upper board as shown on FIG. 45 and FIG. 46. These potentiometers have been set at the factory to the positions shown on FIG. 45 and FIG. 46.

In the Relief Grinding Mode--
The Relief Speed Pot (RSP) and the Relief Torque Pot (RTP) interact with each other. The (RSP) is located on the upper spin board as a relief speed preset at 9:30 (20 Volts DC). See FIG. 45. The (RTP) is located on the control panel and is for relief torque adjustment.

Relief Speed Pot (RSP) when rotated clockwise will increase maximum spin drive speed. This speed should never be above the 10:30 setting.

Relief Torque Pot (RTP) can vary the reel to finger holding torque for relief grinding. The recommended starting point is 30 in/lbs of torque setting. Never adjust the (RTP) potentiometer dial past the red line marking. Setting the reel to finger torque to high could cause the traverse motor system to not operate smoothly.

In the Spin Grinding Mode--
The Spin Torque Potentiometer (STP) and the Spin Speed Pot (SSP) interact with each other. The (STP) is located on the upper spin board as spin torque preset at 2:00 for torque setting. See FIG. 45. The (SSP) is located on the control panel and is for spin speed adjustment.

Spin Torque Pot (STP) controls maximum torque allowable in the spin grinding cycle only. This should never be adjusted past the 2:30 position. If the reel does not turn check that the reel is free turning by hand spinning.

The Spin speed Pot (SSP) controls reel spin speed, adjust as required. This controls the spin drive speed for spinning the reel.

POTENTIOMETERS ON THE LOWER BOARD OF THE SPIN DRIVE CONTROL (SDC) See FIG. 46.
Maximum Speed Pot--
The maximum speed is factory preset to 4:30 (fully clockwise) to allow for maximum spin speed.

Minimum Speed Pot--
The minimum speed is factory preset at 8:30 (full counterclockwise) so zero speed is obtainable for spin speed.

IR Compensation Pot--
The IR Compensation is factory set at 9:00.

Regulation of the spin or relief grind spin motor may be improved by a slight adjustment of the IR COMP pot clockwise from its factory-set position. Overcompensation causes the motor to oscillate or to increase speed when fully loaded. If you reach such a point, turn the IR COMP pot counterclockwise until symptoms just disappear.

UPPER SPIN BOARD

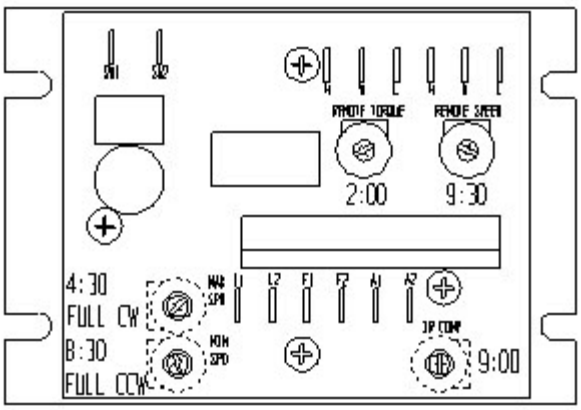


FIG. 45

LOWER SPIN BOARD

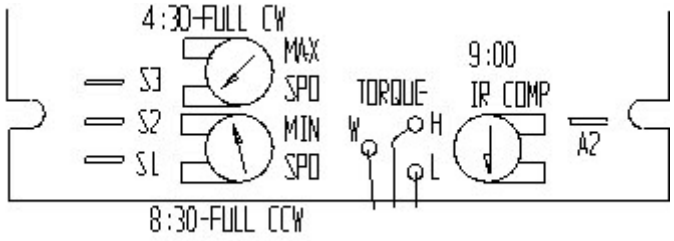


FIG. 46

ELECTRICAL TROUBLESHOOTING

SKILL AND TRAINING REQUIRED FOR ELECTRICAL SERVICING

This Electrical Troubleshooting section is designed for technicians who have the necessary electrical knowledge and skills to reliably test and repair the *550* electrical system. For those without that background, service can be arranged through your local distributor.

This section presumes that you are already familiar with the normal operation of the Grinder. If not, you should read the front of this Manual, or do the servicing in conjunction with someone who is familiar with its operation.

Persons without the necessary knowledge and skills should not remove the control box cover or attempt any internal troubleshooting, adjustments, or parts replacement.

If you have any question not answered in this manual, please call your distributor. They will contact the manufacturer if necessary.

WIRE LABELS

All wires on the 550 have a wire label at each end for troubleshooting. The wire label has a code which tells you wiring information. The wire label has a seven position code. The first two digits are the wire number: 01-99. The next three numbers or letters are the code for the component to which the wire attaches. Example: TDC for Traverse Drive Control. The last two numbers or letters are the number of the terminal on the component to which the wire attaches.

ELECTRICAL TROUBLESHOOTING INDEX

AC Main Power Controls ..... Page 27-29
Spin Drive Controls ..... Page 30-33
Grinding Motor Controls ..... Page 34-35

Traverse Drive Controls-w/prox ..... Page 36-38
Traverse--stopping and reversing ..... Page 38-40

ELECTRICAL TROUBLESHOOTING (Continued)

PROBLEM--AC Main Power Controls: no electrical power to control panel.

Verify all wires shown on the wiring diagram on pages 72-75 are correct and pull on wire terminals with approximately 3 lbs force to verify there are no loose terminal connections and/or no loose crimps between wire and terminal. If problem persists, test as listed below.

Possible Cause	Checkout Procedure	
You must pull out the Emergency Stop Button (ESS) and push the system Start Switch (SSS) to get power to control Panel	A. Listen for the Magnetic Starter (MAG) contacts to pull in with a clunk	Machine works Yes--end troubleshooting No--go to Step B next
Main Power Cord is not plugged in	B. Plug in main power cord	Machine works Yes--end troubleshooting No--go to Step C next
Guard doors must be closed and latched for contactor to pull in.	C. Close and latch guard doors.	Machine works Yes--end troubleshooting No--go to Step D next
Main 20 amp outlet circuit breaker has tripped	D. Check circuit breaker in your building and reset if necessary. (Check wall outlet with a light to make sure it works)	Machine works Yes--end troubleshooting No--but light works in outlet--go to Step E next. No--but light does not work in outlet. You must solve your power delivery problem independent of machine.
No 115 volts AC power to (MAG)	E. Check for incoming power for 115 Volts.	(MAG) Terminals TB-01 to TB-02 for 115 Volts AC Yes-Go to Step F next. No--Check continuity across terminal block, Replace main power cord #32
No 115 Volts AC power out of (MAG)	F. Check for 115 V	(MAG) Term #T1 to T3 for 115 Volts AC Yes--check continuity of wires between T1 and T3 to switches No--Go to Step I

ELECTRICAL TROUBLESHOOTING (Continued)

Possible Causes	***Checkout Procedure***	
115V power not delivered to (MAG) coil.	**I.** Check at Magnetic Starter coil for 115 Volts AC with main electrical power on and pushing (SSS) and **GRINDING MOTOR SWITCH (GMS)** and SPIN MOTOR SWITCH (SMS) in the **OFF** position.	(MAG) Term #A1 to A2 for 115 volts AC Yes--replace magnetic starter No--go to Step **J.** next
No power to the control circuit	**J.** Check voltage to Circuit Breaker CB-1 (1 AMP)	Measure 115 volts AC from Circuit Breaker wire #10 at the Circuit Breaker end to TB-02. Yes-- Go to Step **K.** next No--Check continuity of wire #41, if bad replace
Circuit Breaker Tripped	**K.** Check voltage after Circuit Breaker CB-1 (1-AMP)	Measure 115 Volts AC from Circuit Breaker wire #11 at the Circuit Breaker end to TB-02. Yes--To Step **L.** next No--Wait for Circuit Breaker to cool and push in, if bad replace
Bad Emergency Stop Switch (ESS)	**L. Pull up on Stop Button and** Check voltage after the (ESS).	Measure 115 Volts AC from (ESS) term 1 to TB-02. Yes--Go to Step **M.** next No--Check wire #03 for continuity, then verify switch continuity. If bad replace EES
Bad Grinding Switch	**M.** Check Voltage to switch (GMS)	Measure 115 Volts AC from (GMS) term 1 to TB-02 Yes--Go to Step N next. No--Check continuity of wire #09, if bad replace
	N. Check Voltage from switch (GMS). Switch must be in the OFF position.	Measure 115 Volts AC from (GMS) term 2 to TB-02. Yes--Go to Step O next No--Check continuity of (GMS) switch, if bad replace.

ELECTRICAL TROUBLESHOOTING (Continued)

Possible Cause	***Checkout Procedure***	
System Start Switch (SSS) not functioning.	**O.** Check push button contact input.	Measure 115 volts AC at switch term 3 to TB-02 Yes--Go to Step P. next No--Check continuity of wire #10 from SSS to GMS
	P. Check push button contact output.	Measure 115 Volts AC at switch term 4 to TB-02 with button pressed Yes-- Go to Step Q next No--Replace switch
(MAG) not operating	**Q.** Check contactor action.	Measure 115 Volts AC at A1 and A2 on contractor with (SSS) on. Yes--If MAG is not clicking on, replace contractor No--Go to Step R. next.
Line Voltage is too low	**R.** Check (LVR) monitoring voltage	Measure 115 volts AC at (LVR) Term #6 to #7 Yes--go to Step S. No--check continuity of wires to term #6 and #7 from (MAG). If voltage is less than 101 Volts AC check the incoming voltage. The grinder will not operate with a voltage of less than 101 Volts AC.
(LVR) is not Functioning	**S.** Check (LVR) input voltage with main electrical power on and pushing (SSS) and (GMS) in the OFF position.	Measure 115 volts AC from (LVR) term #8 to TB-02 Yes--go to Step T. No-- Check continuity of wires 56
	T. Check (LVR) output voltage	Measure 115 volts AC from (LVR) term #1 to TB-02 Yes--Check continuity of wire #58 No--Replace (LVR)

ELECTRICAL TROUBLESHOOTING (Continued)

***PROBLEM*--(MAG) turns on but grinding motor and spin motor do not work**

Possible Cause	***Checkout Procedure***	
Doors are not shut	A. Shut doors	Machine works Yes--end troubleshooting No--go to Step B next
Door Safety Switch not operating	B. Check light on Safety switch.	Light on Safety switch is on when doors are closed and goes off when doors are opened Yes--go to Step C next. No--go to Step D
	C. Check gap and alignment of Switch to Key.	Adjust gap or alignment of signal side of switch to key. Yes--end trouble shooting No--go to Step F.
DC Power Supply is not operating	D. Check input to 24 Volt DC Power Supply (PWS)	Measure 115 volts AC from (PWS) term #4 to TB-01, (PWS) term #2 to TB-01, (PWS) term #3 to TB-02, (PWS) term #1 to TB-02. Yes--go to Step E next. No--Check continuity of wires 58 and 59.
	E. Check output of 24 Volt DC Power Supply (PWS)	Measure 24 volts DC from -OUT to +OUT on (PWS). Yes--go to Step F next No--replace DC Power Supply
Relay (REL) not operating	F. Check voltage at relay (REL) with the doors closed on main power on.	Measure 24 volts DC at (REL) term A1 and A2 Yes--Contactor should pull in, if not replace contactor. No--check continuity of wires #51 and #52 and their terminal blocks. If ok then replace switch

***PROBLEM*--(MAG) turns on only with System Start Switch held in.**

Possible Cause	***Checkout Procedure***	
(MAG) holding contact has failed	**A.** Check wiring to and from MAG holding contact in. Verify the magnetic starter holding contact is working.	Measure 115 Volts AC at MAG term 13 to 14 with SSS not pushed. Yes--Replace contactor No--Verify wiring to 13 and 14. If bad replace.

ELECTRICAL TROUBLESHOOTING (Continued)

PROBLEM--SPIN DRIVE NOT WORKING IN SPIN MODE.

Assuming (SSS) System Start Switch is on with 115 volts AC to control panel and all other functions are working.

Verify all wires shown on the wiring diagram on pages 84-87 are correct and pull on wire terminals with approximately 3 lbs force to verify there are no loose terminal connections and/or not loose crimps between wire and terminal. If loose terminals are found, retighten and retest system. If problem persists, test as listed below.

Possible Cause	Checkout Procedure	
Spin Speed Pot (SSP) set to zero	**A.** Set (SSP) to 200 on the control panel.	Spin Motor works Yes--end troubleshooting No--go to Step **B** next
Spin Rotation Switch (SRS) are not on	**B.** Turn (SRS) switch to direction of reel rotation required. NOTE: center position is off	Spin Motor works Yes--end troubleshooting No--go to Step **C.** next
Circuit Breaker 2 (4 AMP) is tripped	**C.** Check Circuit breaker and reset, replace if bad Check that reel is free spinning.	Spin Motor works Yes--end troubleshooting No--go to Step **D.** next
Spin Rotation Switch (SRS) is not working	**D.** Check for (SRS) input of 115 Volts AC	(SRS) Term 5 to term 8 for 115 Volts AC Yes--go to Step **E.** next No--Verify DC power Supply and REL is working. - See D-F PAge 30.
	E. Check for (SRS) output of 115 Volts AC NOTE: Check spin rotation switch in both positions.	(SRS) Term 1 to term 4 for 115 Volts AC Yes--go to Step **F.** next No--replace (SRS) switch
Spin Drive Control (SDS) is not working	**F.** Check (SDC) L1 to L2 for 115 Volts AC	(SDC) Term L1 to term L2 for 115 volts AC Yes--go to Step **G.** next No--replace wires 06 and 07.
	G. Check (SDC) A1 & A2 for approx. 90 Volts DC (Have Spin Speed Pot set to 400 RPM)	(SDC) Term A1 to A2 for approx 90 volts DC Yes--go to Step **H.** next No--go to Step **L**.
	H. Check for approx 90 Volts DC input to (SRS)	(SRS) Term 6 to 7 for approx 90 Volts DC Yes--go to Step **J.** next No--replace wires 02 & 09
	J. Check for approx 90 Volts DC out put to (SRS).	(SRS) Term 2 to 3 for approx 90 Volts DC Yes--go to Step **K.** next No--replace (SRS) switch
Spin Drive motor is bad	**K.** Check spin motor continuity **Disconnect Power from Machine!**	Remove wires at (SRS) Term 2 & 3 check 0 ohms across the black and white wires Yes--end troubleshooting No--got to Step **M.** next

ELECTRICAL TROUBLESHOOTING (Continued)

Possible Cause	Checkout Procedure	
(SSP) is not working	**L.** (SSP) (10K) Remove 3 Remote Speed wires. Red wire to term W White wire to term L Black wire to term H	Check for 10,000 ohms Red wire to white wire Full CCW--0 ohms Full CW-10,000 ohms Red wire to black wire Full CCW--10,000 ohms Full CW--0 ohms Yes--replace (SDC) No--replace (SSP)
Worn Motor Brushes	**M.** Inspect Motor Brushes **DISCONNECT POWER FROM MACHINE !**	Remove the brushes one at a time and maintain orientation for reinsertion. See if brush is worn short 3/8" (10 mm) minimum length. Yes--replace motor brushes No--replace Spin Drive Motor

PROBLEM : Spin drive speed goes at one speed only.

Possible Cause	Remedy	
Wiring hookup to potentiometer is improper. (If components have been replaced	**A.** Check potentiometer wiring for proper hookup. See that speed pot is wired per electrical diagram	If wiring is wrong, correct and test. Yes--end of troubleshooting No--Go to Step B. next
Defective spin speed control (SSP) potentiometer.	B. (SSP) 10K Remove 3 remote speed wires. red wire to term W white wire to term L black wire to term H	Check for 10,000 ohms Red wire to white wire Full CCW--0 ohms Full CW--10,000 ohms Red wire to black wire Full CCW--10,000 ohms Full CW--0 ohms Yes-- Go to Step C. next No--Replace (SSP)
Main circuit board dial pot settings not correct. (If board has been replaced	C. Check all pot settings on both boards as of the (SDC) shown on Page 24. (See Adjustment Section Spin Drive Control [SDC] Board Setting).	Yes-- end of troubleshooting No--replace (SDC)
IR Comp trim pot not adjusted properly.	A. See adjustment section for trim pot setting on Page 24.	Original adjustment was not set properly
Torque to rotate the reel too high.	B. Readjust bearing preload for the reel. Maximum torque load 25 in./lb to rotate reel.	Too much load on drive motor will cause motor to hunt and vary speed.
Check all terminal connections for tightness.	C. When .250 female spade terminals are not tight, remove and crimp slightly together. When reinstalling, push on pressure should have increased for good contact.	When connections are not tight the control board varies voltage to the DC motor which then varies speed.

ELECTRICAL TROUBLESHOOTING (Continued)

PROBLEM-- Grinding motor not working.

Assuming (SSS) System Start Switch is on with 115 volts AC to control panel and all other functions are working.

Verify all wires shown on the wiring diagram on pages 70 are correct and pull on wire terminals with approximately 3lbs force to verify there are no loose terminal connections and/or no loose crimps between wire and terminal. If loose terminals are found, retighten and retest system. If problem persists, test as listed below.

Possible Cause	Checkout Procedure	
Grinding Motor Switch (GMS) is not on	**A.** Turn switch on	Grinding Motor works Yes--end troubleshooting No--go to Step **B.** next
Guard doors are not closed and latched	**B.** Close and latch guard doors.	Grinding Motor works Yes--end troubleshooting No--go to Step **C.** next
Circiut Breaker Tripped	**C.** Check voltage to Circuit Breaker - 2.	Measure 115 Volts AC from Wire #15 on CB-02 to TB-02. Yes--go to Step **D.** next No--Verify REL is working- pg. 30
	D. Check Voltage out of Circuit Breaker- 2	Measure 115 Volts AC from Wire #15 on CB-02 to TB-02. Yes--go to Step **E.** next No-- Reset circuit Breaker after it cools or replace.
GMS not working	**E.** Check for power to GMS	GMS term 5 to TB-02 for 115 Volts AC Yes--go to Step **F.** next No--With power off, check continuity of wire 53 and replace if bad.
	F. Check for power from GMS	GMS Term 4 to TB-02 for 115 Volts AC Yes--Go to Step **G.** next No--replace GMS
RELAY not working	**G.** Check for power at coil of Relay	Measure 115V AC from terminals 0 to 1 of REL2 Yes--Go to step **H**. next No -- Check wires 57 & 01 and replace
	H. No power to contacts of relay.	Measure 115V AC from terminals 4 to 8 of REL2 Yes--Go to step **I**. next No -- Go to step **J**,
	I. Contacts not working in Relay 2	Measure 115V AC from terminals 2 to 6 of REL2 Yes--Go to step **L** No -- Replace Relay 2

ELECTRICAL TROUBLESHOOTING (Continued)

Possible Cause	Checkout Procedure	
Circuit Breaker Tripped	**J.** Check voltage to Circuit Breaker CB-3 (20 AMP)	Measure 115 volts AC from Circuit Breaker wire #16 at the circuit breaker end to TB-02 Yes--Go to Step **K** next No--Check Continuity of wire #16, if bad replace. Also check that MAG is working properly. pg 27
	K. Check voltage after Circuit Breaker CB-3 (20 AMP)	Measure 115 volts AC from Circuit Breaker wire #03 at the Circuit Breaker end to TB-02. Yes--Replace wire #03 No--Wait for Circuit Breaker to cool and push in, if bad replace
Grinding Head Motor cord is bad (remove back cover to motor)	**L.** Check grinding motor cord #01.	At motor check Line 1 to Line 2 for 115 V AC Yes--replace motor No--replace grinding motor cord #31

PROBLEM--Traverse Drive not working.

Assuming (SSS) System Switch is on with 115 Volts AC to control panel and all other functions are working.

Possible Cause	Checkout Procedure	
Traverse Motor Switch (TMS) is not on	**A.** Turn on (TMS)	Traverse works Yes--end troubleshooting No--got to Step **B.** next
Traverse Speed Pot (TSP) set to zero	**B.** Set (TSP) to 35 on the control panel	Traverse works Yes--end troubleshooting No--go to Step **C.** next
Fuse on Traverse Drive Control (TDC) has failed	**C.** Check fuse and replace if failed. Too heavy a grind causes grinding head traverse motor to overload and blow the fuse,	Traverse works Yes--end troubleshooting No--go to Step **D.** next
Traverse Drive Control (TDC) is bad	**D.** Check for 115 Volts AC incoming to (TDC)	On (TDC) Terminal L1 to L2 for 115 Volts AC Yes--Go to Step **F.** next No--Go to Step **E.** next
Bad wires to (TDC)	**E.** Check for 115 Volts AC at (TMS). (Make certain (TMS) is on)	Check for 115 Volts AC at Term 1 & 4 of the (TMS) Note: Switch must be on. Yes--With power off, check continuity of wires 28 & 29, if bad replace wires. No--Check 115 Volt AC power delivered to (TMS) Term 2 & 5. If no check wires 12 & 13. If yes then replace TMS

ELECTRICAL TROUBLESHOOTING (Continued)

Possible Cause	Checkout Procedure	
No DC Voltage from (TDC) Traverse Drive Control	**F.** Check for 90 Volts DC across (TDC) terminals #A1 to #A2 this voltage drives the DC traverse motor. NOTE: Traverse must be on and have (TSP) turned full CW to maximum voltage of 90 VDC	Check (TDC) terminals #A1 to #A2 for 90 Volts DC Yes--go to Step **G.** next No--go to Step **H.** next
Traverse Motor is bad	**G.** Check traverse motor continuity **DISCONNECT POWER FROM MACHINE**	Remove motor wires from terminals #A1 & #A2 Check 0 ohms across the black and white wires Yes-end troubleshooting No--go to Step **I.** next
(TSP) is not working	**H.** Check (TSP) for 10,000 ohms. Remove three wires from (TDC) red from term #8 white from term #7 black from term #9	Check for 10,000 ohms red to white wires Full CCW--0 ohms Full CW--10,000 ohms Red to black wires Full CCW--10,000 ohms Full CW--0 ohms Yes--replace the (TDC) No--replace (TSP)
Worn motor brushes	**I.** Inspect Motor Brushes **DISCONNECT POWER FROM MACHINE**	Remove the brushes one at a time and maintain orientation for reinsertion. See if brush is worn short, 3/8" (10 mm) minimum length. Yes--replace motor brushes No--replace Traverse Motor

PROBLEM--Traverse does not stop to reverse directions when bearing housing comes in contact with the proximity switch on the left side or right side of machine.

Prox is Positioned Incorrectly	A. Check to make sure the Proxes are on the appropriate sides. The light side Prox should be on the outside	If incorrect, reposition Yes--end troubleshooting No--Go to Step B next.	
Prox is mounted incorrectly	B. Adjust so Prox is located with sensing end out from prox holder	Adjust Prox depth on mounting Yes--end troubleshooting No--Go to Step C next.	
Proximity Switch is bad.	C. Proximity switch is not working properly or wire connections are loose.	First check to see if proximity light comes on. When the light is on, it means that there is electricity coming to proximity switch. Actuate prox switches with steel tool to take measurements.	The light coming on shows the proximity is getting electrical contact.
		Left proximity (PROX 1) check Traverse drive Control (TDC) between terminals #13 (black wire) and #15 (brown wire).	Proximity light on- 0 Volts DC Proximity light off- 12 Volts DC
		Right proximity (PROX) check #13 (black wire) and #15 (brown wire).	Proximity light on- 0 Volts DC Proximity light off- 12 Volts DC
			Replace proximity switch if the voltages do not read as above.

PROBLEM--Traverse speed control goes at one speed only.

Possible Cause	Checkout Procedure	
Defective speed control potentiometer	**A.** Check potentiometer for 10,000 ohms. Remove three wires from Traverse Drive Control red from term #8 white from term #7 black from term #9	Check for 10,000 ohms Red to White wires Full CCW - 0 ohms Full CW - 10,000 ohms Red to Black wires Full CCW - 10,000 ohms Full CW - 0 ohms Yes--Go to Step **C.** next No--replace potentiometer. Wiper inside of potentiometer controls speed. Wiper may be bad and not making contact.
Wiring hookup to potentiometer is improper. (If components have been replaced.)	**B.** Check potentiometer wiring for proper hookup. See that speed pot is wired per electrical diagram	Wrong wire hookup effects traverse control. Reversing red and orange wires to potentiometer to the D C motor will run at zero speed but maximum will be too slow. Reversing red and white wires does not affect speed control. Check for Proper function. Yes--end troubleshooting No--Go to Step **D.** next
Main circuit board dial pot settings not correct. (If board has not been replaced.)	**C.** Check all pot settings on circuit board as shown in wiring diagram. (See adjustment section Traverse Motor Control Board Settings.)	Minimum and maximum pot settings effect traverse speed.

ELECTRICAL TROUBLESHOOTING (Continued)

PROBLEM--If the wheel traverses to one end of stroke or the other and it stops and does not reverse direction.

Possible Cause	Remedy	Reason
Proximity switch is not working properly or wire connections are loose	First check to see of proximity light comes on. When the light is on, it means that there is electricity coming to proximity switch. Actuate prox switches with steel tool to take measurements.	The light coming on shows the proximity is getting electrical contact.
	Left proximity (PROX1) check Traverse drive Control (TDC) between terminals #14 (black wire) and #15 (brown wire).	Proximity light on- 0 Volts DC Proximity light off- 12 Volts DC
	Right proximity (PROX) check (TDC) between terminals #13 (black wire) and #15 (brown wire).	Proximity light on- 0 Volts DC Proximity light off- 12 Volts DC
		Replace proximity switch if the voltages do not read as above.

PROBLEM--Insufficient hesitation at carriage stops prior to reversing traverse.

The dwell time on the traverse drive control not set properly.	Reset dwell time as required. One increment increases Dwell time by 1/2 second.	

PROBLEM--Traverse changes directions erratically while running in traverse cycle.

Loose wire to proximity switch.	Check wire connections from the proximity switches and tighten down screws.	A loose wire connection will give intermittent electrical contact.

MECHANICAL TROUBLESHOOTING

PROBLEM-- Excessice noise or vibration on one end of the machine.

Possible Cause	Checkout Procedure
Set screws on bearings are not tight on grinding shaft.	Tighten set screws located on bearings (#80336)

PROBLEM--Grinding wheel traverse binding.

Possible Cause	Checkout Procedure
Shafts are dirty.	Clean the shafts as specified in the maintenance section of this manual.
Grinding shaft is at a severe angle.	Raise or lower one end of the shaft until approximately level. This grinder is not designed to operate at a sever angle. Adjust reel or setup until the shaft is approximately level.

PROBLEM-- Handwheel or vertical indicator gage "walks" during grinding.

Possible Cause	Checkout Procedure
Bracket connecting gage to vertical adjuster is loose.	Push lightly up and down on the digital gage to see if it is loose. Tighten the screws on the bracket to the vertical adjuster or remove the gage and tighten the screws from the bracket to the gage.
Plug and set screw loose.	Tighten the drag on the vertical shafts by tightening the setscrew located on the back of the vertical adjuster husing. (See Vertical Infeed Shaft Drag in the adjustment section.)

PROBLEM--Reels ground have high/low blades

Possible Cause	Checkout Procedure
Traverse Speed set too fast.	Check roundness using a magnetic base dial indicator. Traverse speed should be set approximately 12 ft/min. (4 meters/min.) if roundness is varying.

MECHANICAL TROUBLESHOOTING

PROBLEM-- Uneven traverse speed or grinding stock removal from reel is irregular.

Possible Cause	Checkout Procedure
Linear bearings are damaged or have grit buildup causing uneven traversing load.	Clean shafts and bearings according to the lubrication of Grinding Shaft and Linear Bearings instructions in the Maintance Section of the manual. If problem persists replace linear bearings according to the replacement of linear bearings instructions.
Grinding shaft or wheels have grit buildup causing uneven loading.	Clean the wheel flanges and shaft (see Lubrication of Grinding Shaft). Replace flanges or shaft if necessary.
Left side traverse pulley is full of grit causing the pulley not to turn freely on shaft.	Clean and lubricate the shaft and pulley.

PROBLEM--Traverse Belt Slips

Possible Cause	Checkout Procedure
Clamping tip is not adjusted properly.	Adjust the clamping tip as specified in the Traverse Clamp Force section of this manual.
Too heavy a grind for traverse speed.	Slow the traverse speed or back off on the amount that is being infed.

PROBLEM-- Too heavy a burr on cutting edge of reel blades.

Possible Cause	Checkout Procedure
Traverse speed set too high causing a heavy burr on the reel blade when spin grinding.	Traverse speed should be set lower approximately 12 ft./min (4 meters/min.) for a smaller burr on the cutting edge.

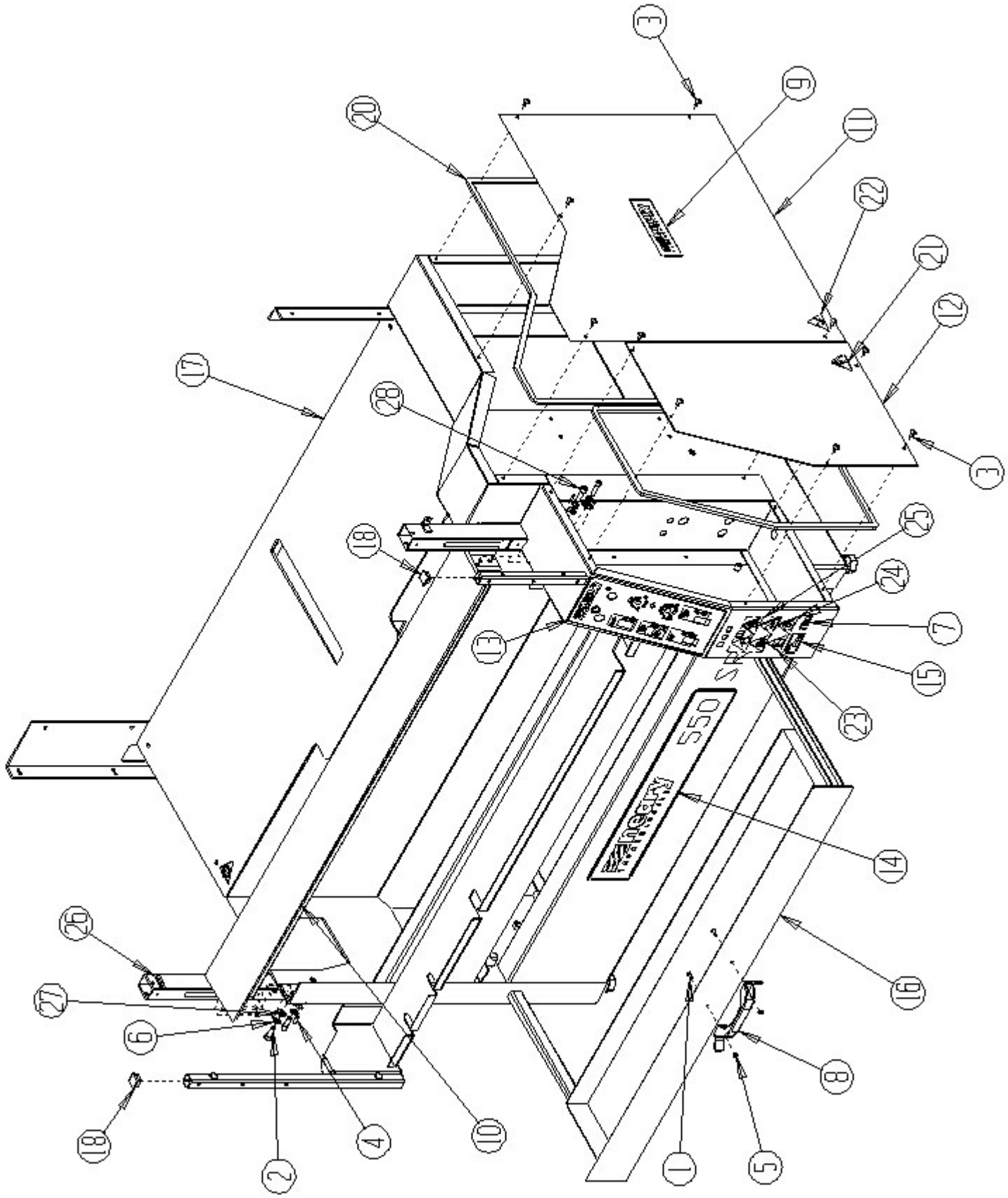
PROBLEM--Cone shaped reel after grinding.

Possible Cause	Checkout Procedure
Grinding head travel not parallel to the reel center shaft.	Grinding head travel was not setup parallel to the reel center shaft in vertical and horizontal planes. See Align the Reel Section.

PROBLEM--Relief grind on the reel blades do not go the full length of the reel.

Possible Cause	Checkout Procedure
Need to adjust the finger stop.	Adjust finger stop and check for contact full length.
Need to dress the Wheel to the correct angle	Dress the wheel (For more detail, see relief grinding section in operating instructions of the manual.)

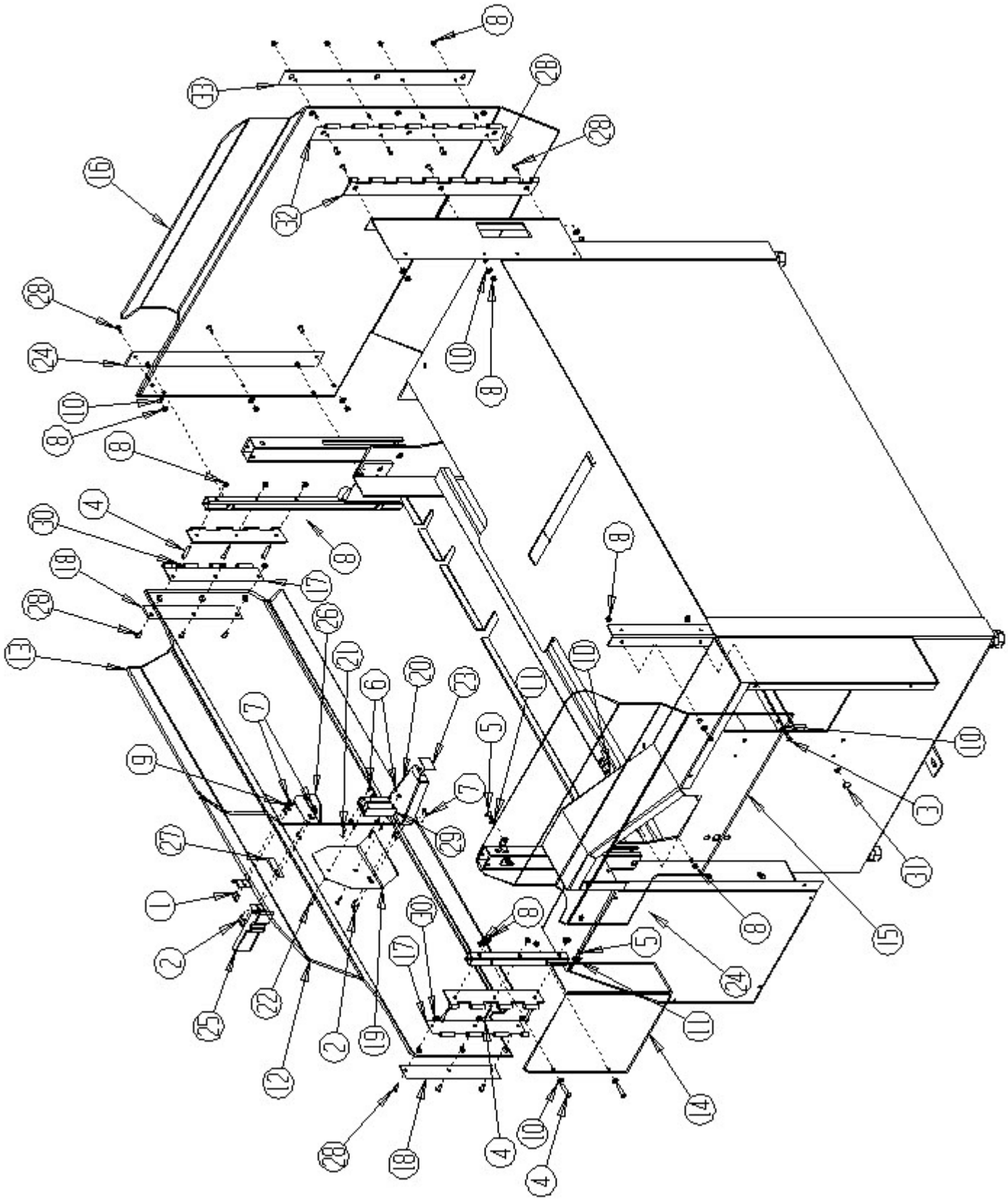
EXPLODED VIEW: 55568 MAIN BASE ASSEMBLY



PARTS LIST: 55568 MAIN BASE ASSEMBLY

DIAGRAM NUMBER	PART NUMBER	DESCRIPTION
1	B191011	10-24 x 5/8 Socket Head Cap Screw
2	B371611	3/8-16 x 1 Socket Head Cap Screw
3	D250808	1/4-20 x 1/2 threaded Cut Screw "F"
4	H251202	Roll Pin .25 d x .75 Lg
6	K371501	3/8 Lockwasher Split
7	3708697	Patent Decal
8	09891	Grab Handle Enclosure
9	09913	Neary Technologies Decal
10	50234	Tooling Bar-Machined
11	50306	Drive Panel Cover
12	50307	Electrical Panel Cover
13	55129	Control Panel Decal
14	50398	Neary 550 Decal
15		Nameplate 550SR & Serial Number
16	55513	Tray Weldment
17	55100	Frame Weldment 550
18	80362	Square Plug 1" Sq x 14 Ga Tube
20	3708378	Foam Strip .25T 50Ft
21	3708448	Electrical Warning Decal
22	3708458	Sharp Warning Decal
23	3708605	Respirator Warning Decal
24	3708606	Hearing Protection Decal
25	3708703	Safety Symbol Decal
26	6309111	Up/Down Decal
27	K370101	Flat Washer 3/8
28	B372011	3/8-16 x 1.25 Socket Head Cap Screw

EXPLODED VIEW: 55586 GUARD ASSEMBLY

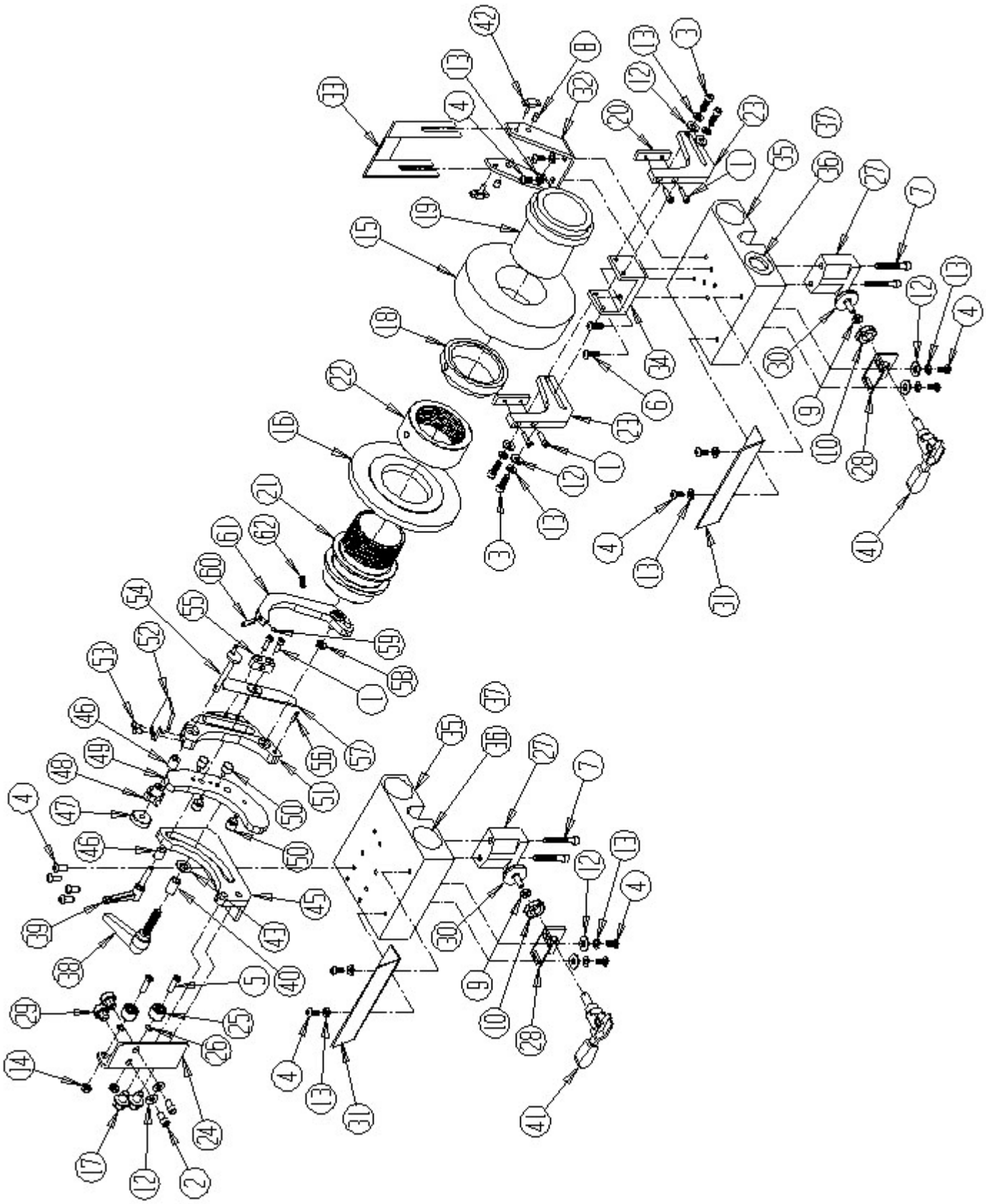


PARTS LIST: 55586 GUARD ASSEMBLY

DIAGRAM NUMBER	PART NUMBER	DESCRIPTION
1	B191011	10-24 x 5/8 Socket Head Cap Screw
2	B191211	10-24 x 3/4 Socket Head Cap Screw
3	B251216	1/4-20 x 3/4 Button Head Socket Cap Screw
4	B252416	1/4-20 x 1-1/2 Button Head Socket Cap Screw
5	B310813	5/16-18 x 1/2 Button Head Socket Cap Screw
6	J167000	8-32 Locknut Jam Nylon
7	J197000	10-24 Locknut Nylon Full
8	J257000	1/4-20 Thin Locknut Nylon Full
9	K190001	Flat Washer #10
10	K250001	Flat Washer 1/4
11	K310001	Flat Washer 5/16
12	50366	Guard Door R.H.
13	50368	Guard Door L.H.
14	50370	Guard Panel R.H. Small
15	50372	Guard Panel R.H. Large
16	55143	Guard Panel L.H.
17	50382	Front Guard Hinge
18	50384	Front Hinge Plate
19	6309124	Front Door Plate
20	50402	Door Rear Bracket
21	3707585*	8-32 x .75 Flat Head Tamper Resistant Screw
22	3708819*	8-32 x .75 Button Head Tamper Resistant Screw
23	80374	Rubber Pad
24	55585	Guard Plate Assembly
25	3708416	Soft Latch
26	6309033	Door Rear Bracket
27	6309038	Door Front Bracket
28	B251016	1/4-20 x 5/8 Button Head Socket Cap Screw
29	55523	Door Safety Switch
30	J257000	1/4-20 Thin Locknut Nylon
31	3708542	Hole Plug - .625 Diameter
32	55139	Rear Guard Hinge - LH
33	55140	Guard Plate- Rear LH

* A special wrench is need to adjust these screws. Please contact the factory for details.

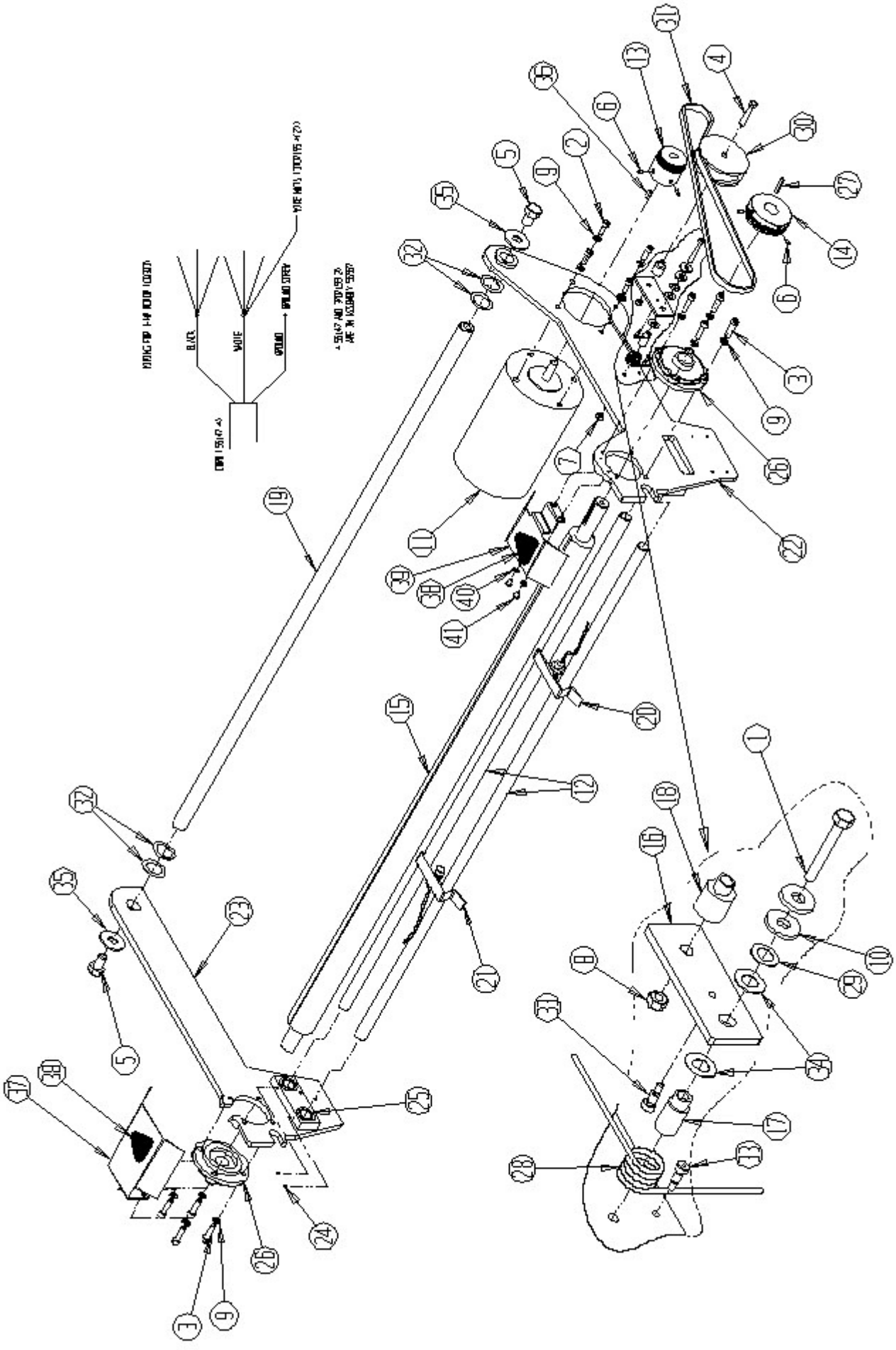
EXPLODED VIEW: 55583 GRINDING HEAD ASSEMBLY



PARTS LIST: 55583 GRINDING HEAED ASSEMBLY

DIAGRAM NUMBER	PART NUMBER	DESCRIPTION
1	B191011	10-24 X 5/8 Socket Head Cap Screw
2	3708848	1/4-28 x 1/2 Socket Head Cap Screw w/ patch
3	B251211	1/4-20 x 3/4 Socket Head Cap Screw
4	B250816	1/4-20 x 1/2 Button Head Socket Cap Screw
5	80407	1/4-20 x 1.00 Socket HeadCap Screw - Low Head
6	B251216	1/4-20 x 3/4 Button Head Socket Cap Screw
7	B253211	1/4-20 x 2.00 Socket Head Cap Screw
8	H250602	Roll Pin .25D x .375 Lg
9	J252000	1/4-20 Hex Jam Nut
10	J627200	5/8-18 Locknut Jam Nylon
12	K250001	Flat Washer 1/4
13	K251501	1/4 Lockwasher Split
14	J257000	1/4-20 Locknut Jam Nylon
15	05720	Grinding Wheel 6 x 2.75B x 1.5W 46G
16	05731	Grinding Wheel 6 x 2.75B x .38W 24G Type 1
17	3708839	3/8-16 x 1/2 Screw w/locking Flange
18	50037	Spin Flange Nut
19	50039	Spin Wheel Flange
20	50073	Wear Pad
21	55200	Relief Wheel Flange
22	55201	Relief Flange Nut
23	50204	Spin Yoke
24	55126	Bearing Support Bracket
25	55280	Double Bearing Assembly
26	80406	Spacer washer
27	50297	Traverse Shoe
28	50298	Traverse Clamp Bracket
29	55296	Single Bearing Assembly
30	50310	Belt Clamp Tip
31	50320	Traverse Guard
32	50321	Shield Mount Bracket
33	50324	Spark Shield
34	50329	Spin Support
35	50569	Bearing Housing Assembly
36	09404	Linear Bearing
37	09479	Oil Seal 1"ID x 1.57"OD x .187
38	3708561	Adjustable Handle 3/8-16 x 1.56 Long
39	3708835	Adjustable Handle 1/4-20 x 1.25 Long
40	27115	Spacer - .386 ID x .50 OD x .75 Long
41	80335	Destaco 602 Clamp
42	80337	T-knob Assembly
43	xxxxxx	Washer
44	B190811	10-24 x 1/2 Socket Head Cap Screw
45	55119	Finger Rotate Base
46	6009057	Spacer .265 ID x .48 OD x .50 Long
47	55144	Knob - 1/4-20 x 1" Diameter
	C190360	10-32 x 3/16 Socket Head Set Screw
48	3708838	Star Knob - 1" Diameter
49	55112	Cam Plate
50	80392	Cam Follower - 1/2" Diameter
51	55113	Finger Slide
52	55117	Fixed Finger
53	B190634	10-32 x 3/8" Button Head Socket Cap Screw
54	55118	Stop Pin
55	55116	Index Finger Stop Block
56	H181202	3/16 x 3/4" long Roll Pin
57	55579	Locking Plate Weldment
58	3708833	Spacer - .252 ID x .50 OD x .125 Long
59	C190467	10-32 x 1/4" Socket Head Set screw
60	55127	3/16 Diameter Index Stop Pin
61	55581	Indexing Finger Assembly
62	3708107	Compression Spring

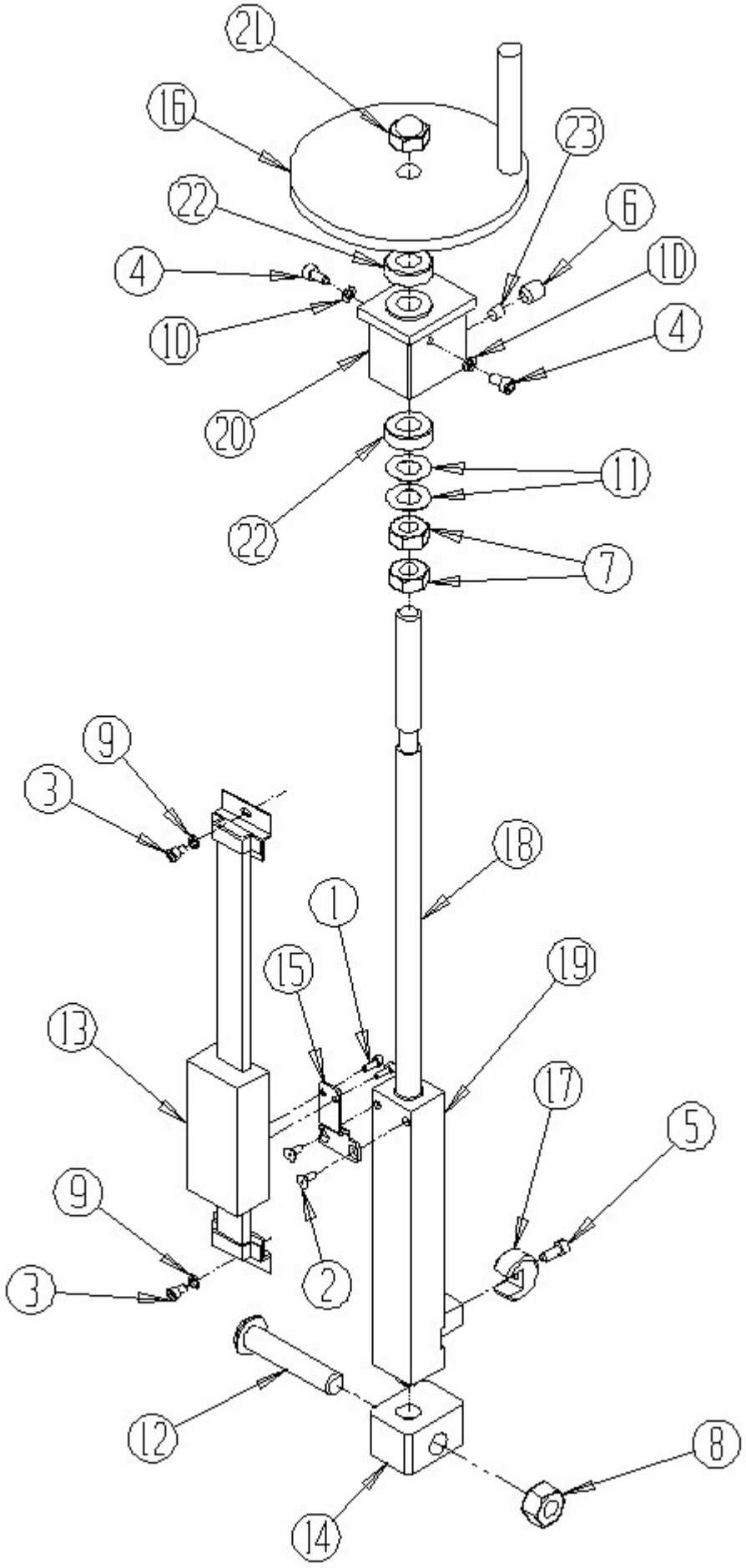
PARTS LIST: 55562 PIVOT ARM AND GRINDING SHAFT ASSY 1 of 2



ARTS LIST: 55562 PIVOT ARM AND GRINDING SHAFT ASSY 1 of 2

GRAM MBER	PART NUMBER	DESCRIPTION
	B313601	5/16-18 x 2-1/4 Hex Head Cap Screw
	B371611	3/8-16 x 1 Socket Head Cap Screw
	B372411	3/8-16 x 1-1/2 Socket Head Cap Screw
	B373601	3/8-16 x 2-1/4 Hex Head Cap Screw
	B752001	3/4-10 x 1.25 Hex Head Cap Screw
	C250820	1/4-20 x 1/2 Cup Point Set Screw
	J317100	5/16-18 Locknut Nylon Full
	J377100	3/8-16 Locknut Hex Nylok Full
	K371501	3/8 Lockwasher Split
	R000453	Flat Washer .31 x .88 x .104T
	09393	Motor 1HP 115/230V 60/50Hz
	50235	Traverse Shaft
	50236	Pulley 2.45 Diameter Poly V
	50237	Pulley 3.72 Diameter Poly V
	50256	Grinding Wheel Shaft
	50279	Tensioner Bar
	50280	Tensioner Pivot Shaft
	50281	Tensioner Pulley Shaft
	50282	Pivot Shaft Support Arm
	50311	Prox Switch Holder R.H.
	50318	Prox Switch Holder L.H.
	50574	Arm Assembly R.H.
	50576	Arm Assembly L.H.
	C190420	10-24 x 1/4 Cup Point Set Screw
	09680	Torrington Bearing
	80336	Piloted Bearing Flange
	80338	Key .25 sq x 1.25 Lg
	80342	Torsion Spring
	80343	Conical Washer .539 x .862 x .014T
	80349	Idler Pulley 4.0 Diameter
	80350	Poly V Belt
	80351	Conical Washer 1.40 x 2.03 x .024T
	3708425	Shoulder Bolt .313 D x .375 L
	3709019	Thrust Washer .500 x .937 x .032 T
	3709886	Flat Washer .812 x 2.25 x.135 T
	80126	Key 3/10 sq x 1.00 Lg
	55262	Guard - Grinding Wheel LH
	3708458	Decal - Warning Sharp
	55263	Guard - Grinding Wheel RH
	K251501	1/4 Lockwasher
	B250816	1/4 -20 x 1/2 L BHSCS

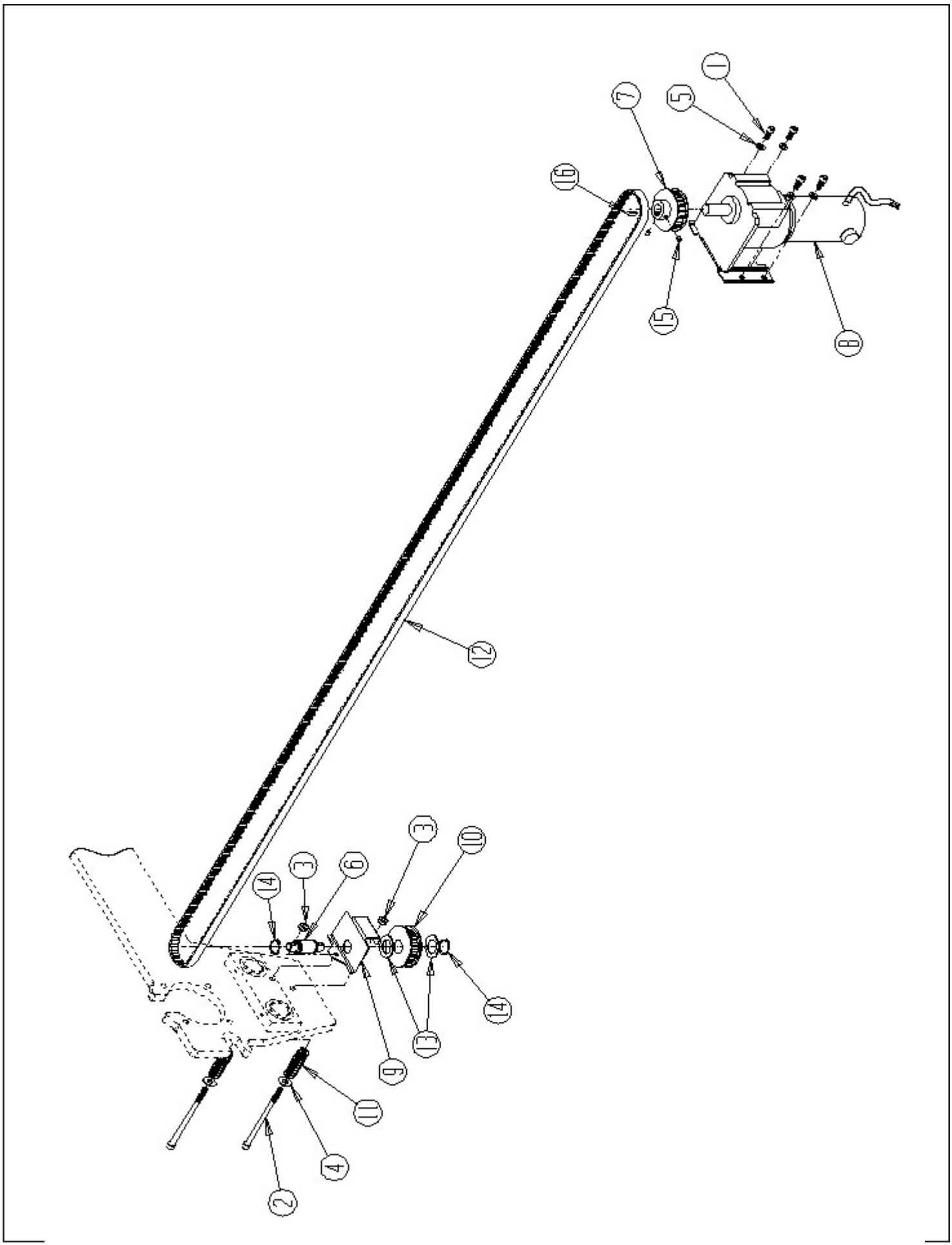
EXPLODED VIEW: 55562 PIVOT ARM AND GRINDING SHAFT ASSY 2 of 2



PARTS LIST: 55562 PIVOT ARM AND GRINDING SHAFT ASSY 2 of 2

DIAGRAM NUMBER	PART NUMBER	DESCRIPTION
1	B120311	5-40 X .188 Lg Socket Head Cap Screw
2	B130605	6-32 x 3/8 Flat Head Socket Cap Screw
3	B160411	8-32 x 1/4 Socket Head Cap Screw
4	B190611	10-24 x 3/8 Socket Head Cap Screw
5	B190831	10-24 x 1/2 Socket Head Cap Screw
6	C370820	3/8-16 x 1/2 Cup Point Set Screw
7	J502000	1/2-13 Hex Jam Nut
8	J507100	1/2-13 Locknut Full Nylon
9	K161501	#8 Lockwasher Split
10	K191501	#10 Lockwasher Split
11	09068	Washer Conical .50 x 1.25 x .078T
12	09299	1/2-13 x 2.5 Lg Button Head Socket Cap Screw
13	09707	Digital Scale, 6" Mitutoyo #572
14	50095	Mounting Block
15	50283	Gage Mounting Bracket
16	50322	Handwheel 1/2-13 ID
17	50325	Arm Support Pivot
18	50348	Vertical Adjustment Shaft
19	50573	Vertical Adjuster Assembly
20	50591	Cap Assembly
21	80344	Hex Acorn Nut 1/2-13
22	3709042	Ball Bearing Thrust Nice #603-1/4
23	7469149	Nylon Plug 5/16 Diameter

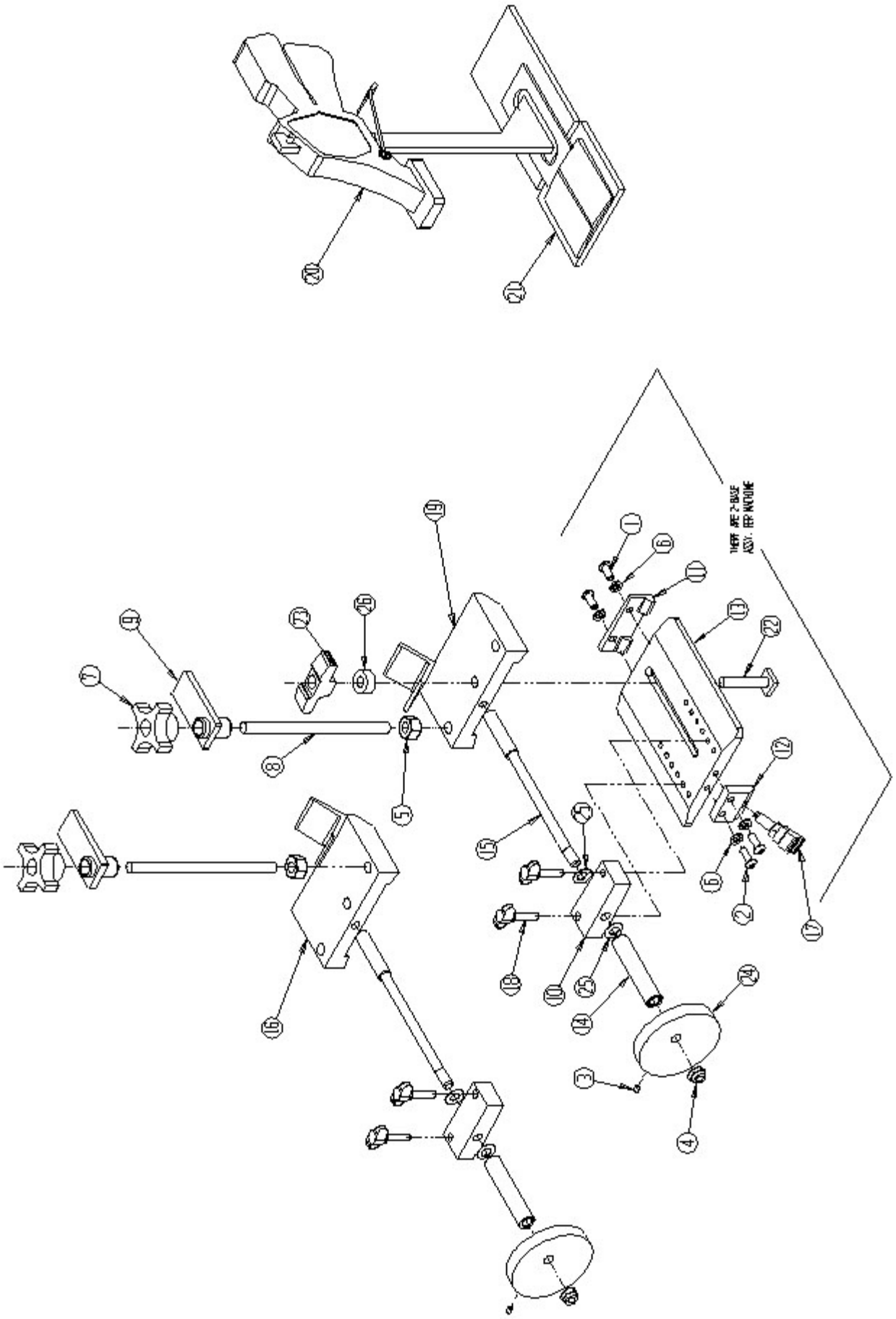
EXPLODED VIEW: 55563 TRAVERSE DRIVE ASSEMBLY



PARTS LIST: 55563 TRAVERSE DRIVE ASSEMBLY

DIAGRAM NUMBER	PART NUMBER	DESCRIPTION
1	B251011	1/4-20 X 5/8 Socket Head Cap Screw
2	B257211	1/4-20 x 4.5 Socket Head Cap Screw
3	J257000	1/4-20 Locknut Thin
4	K250001	Flat Washer 1/4
5	K251501	1/4 Lockwasher Split
6	50309	Traverse Pulley Shaft
7	50354	Cog Pulley Drive
8	50361	Motor Assembly Trav W16
9	50363	Traverse Pulley Guard
10	55553	Cog Pulley Driven .375 P .50W
11	80353	Die Spring .34 ID x 2.0 Lg
12	80354	Cog Belt
13	80355	Thrust Washer .75 ID x 1.25 OD
14	3709331	Retaining Ring
15	C250460	1/4-28 x 1/4 Socket Head Set Screw
16	80126	3/16 SQ x 1.00 Key

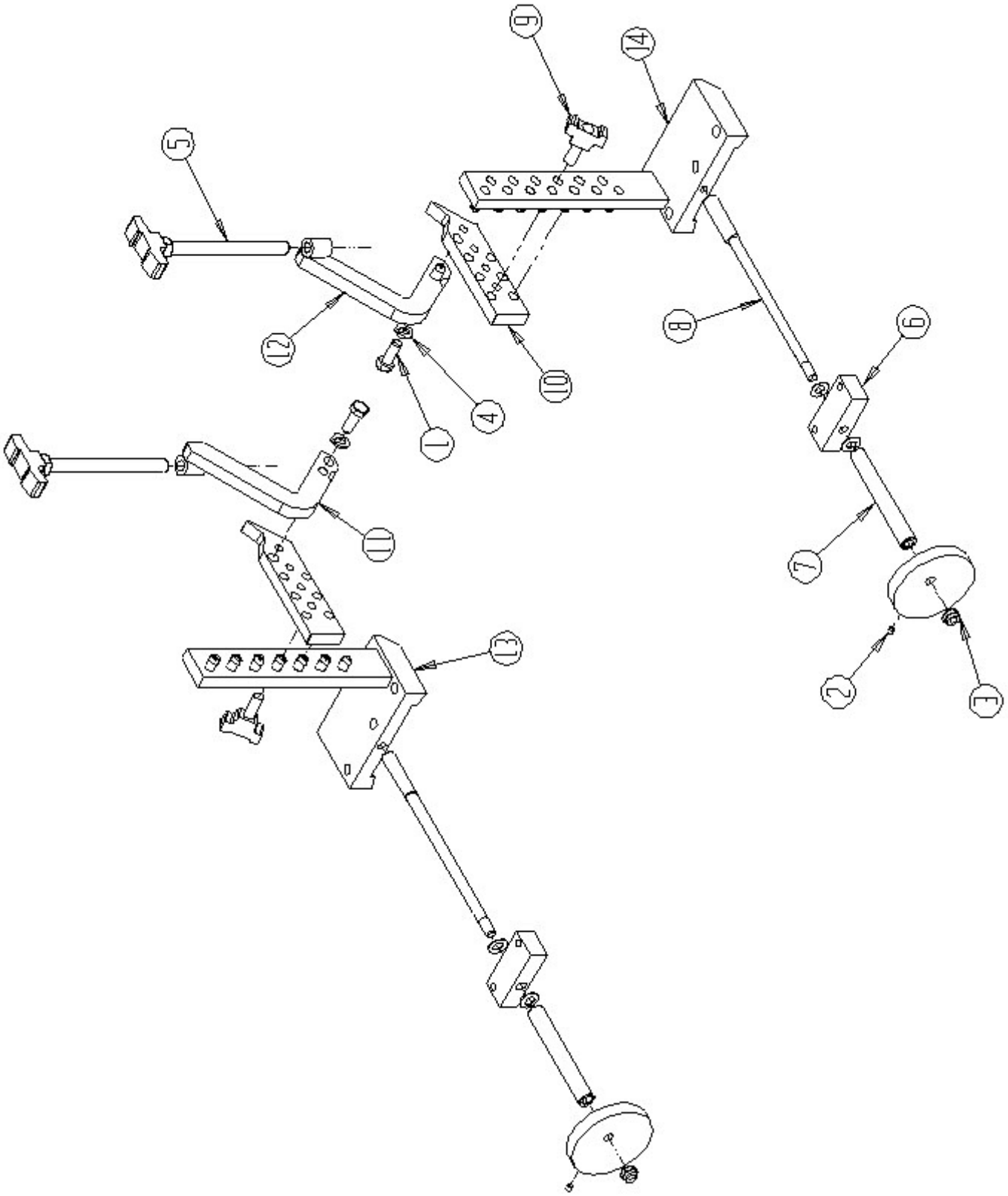
EXPLODED VIEW: 55565 MOWER SUPPORT ASSEMBLY



PARTS LIST: 55565 MOWER SUPPORT ASSEMBLY

DIAGRAM NUMBER	PART NUMBER	DESCRIPTION
1	B251016	1/4-20 X 5/8 Button Head Cap Screw
2	B251216	1/4-20 x 3/4 Button Head Cap Screw
3	C250420	1/4-20 x 1/4 Cup Point Set Screw
4	J377000	3/8-16 Locknut Jam Nylon
5	J502000	1/2-13 Hex Jam Nut
6	K251501	1/4 Lockwasher Split
7	09853	Knob 4 prong 1/2-13 F
8	17119	Threaded Stud 1/2-13 x 65 Lg
9	50242	Roller Clamp Weldment
10	50288	Tooling Block Adjustment
11	50290	Front Clamp Plate
12	50291	Clamp Block
13	50292	Tooling Base Plate
14	50295	Tooling Spacer
15	50296	Acme Shaft L.H. Tooling
16	50568	V Roller Weldment L.H.
17	50570	T-Knob Assembly 3/8-16 x .75 Dog Point
18	80396	Knob Assembly 1/4-20 x 1.0 Lg
19	55506	V Roller Weldment R.H.
20	50254	Rear Roller Clamp Assembly
21	70512	Roller Support Bracket Weldment
22	80346	Bolt T Slot 3/8-16 x 2.0 Lg
23	3708245	Knob T 235 3/8-16 F
24	3708393	Handwheel 3.50 Diameter
25	3709062	Conical Washer .382 x .75 x .035 T
26	3889045	Spacer .406 ID x .88 OD x .38Long

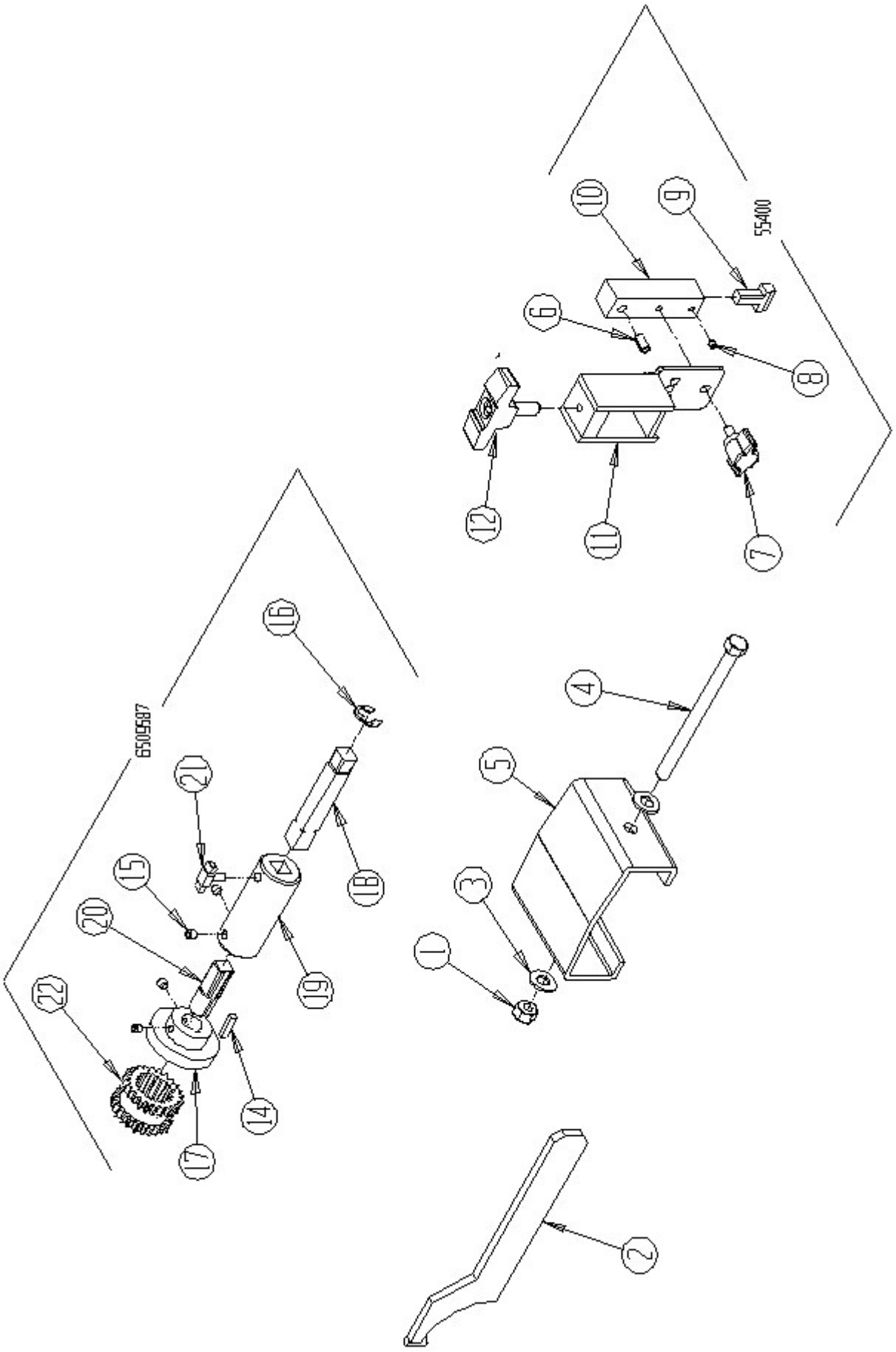
EXPLODED VIEW: 55572 VERTICAL MOWER SUPPORT ASSEMBLY



PARTS LIST: 55572 VERTICAL MOWER SUPPORT ASSEMBLY

DIAGRAM NUMBER	PART NUMBER	DESCRIPTION
1	B371601	3/8-16 X 1 Hex Head Cap Screw
2	C250420	1/4-20 x 1/4 Cup Point Cap Screw
3	J377000	3/8-16 Locknut Jam Nylon
4	K371501	3/8 Lockwasher Split
5	17519	Knob T Assembly 1/2-13 x 6.5"
6	50288	Tooling Block Adjustment
7	50295	Tooling Spacer
8	50296	Acme Shaft L.H. Tooling
9	50592	Knob T 3/8-16 x 1.0 Lg
10	55282	Hanger "V"
11	55343	Clamp Weldment Large L.H.
12	55358	Clamp Weldment Large R.H.
13	55511	Tooling Post Assembly L.H.
14	55512	Tooling Post Assembly R.H.

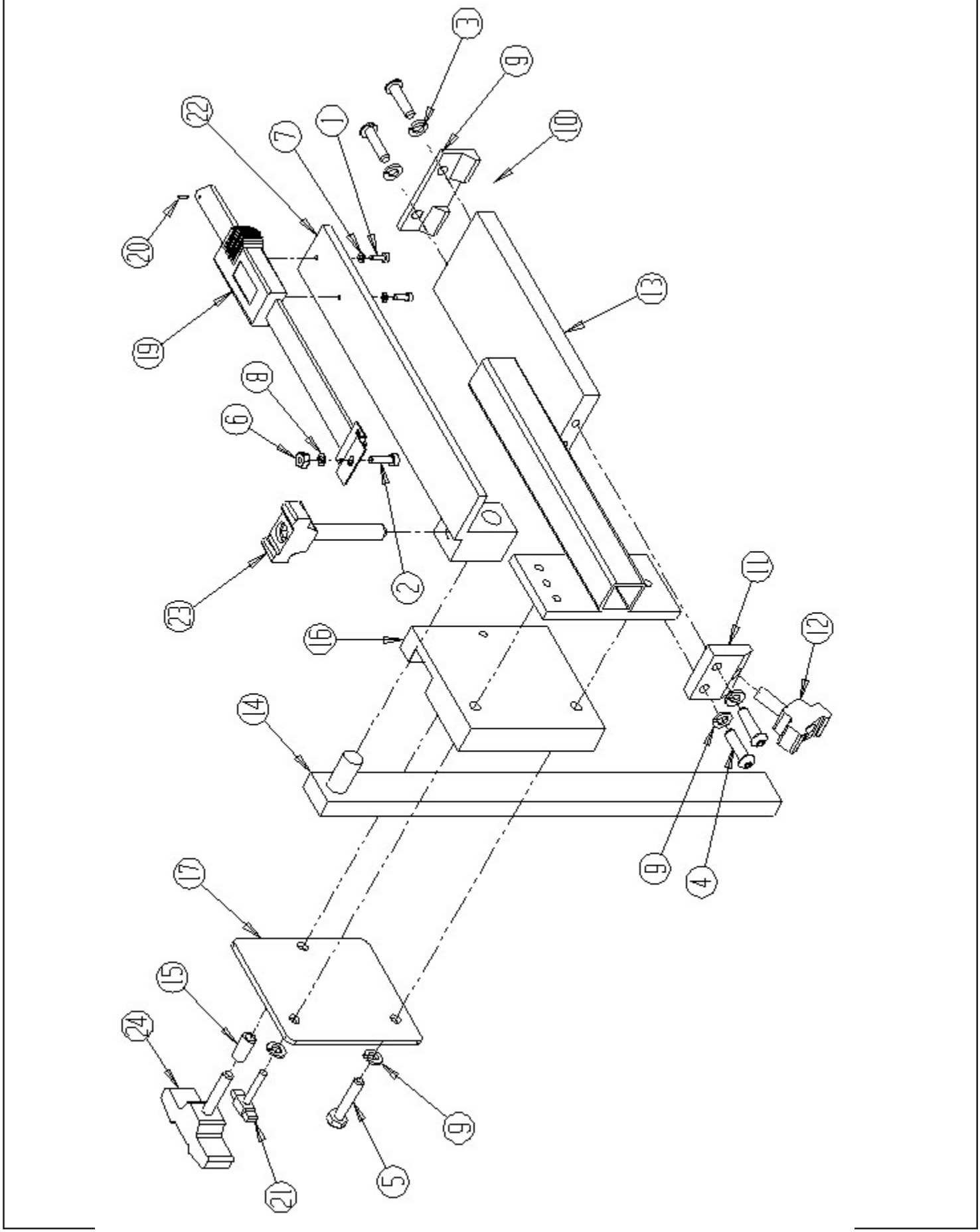
EXPLODED VIEW: 55574 CARTON ASSEMBLY



PARTS LIST: 55574 CARTON ASSEMBLY

DIAGRAM NUMBER	PART NUMBER	DESCRIPTION
1	J377100	3/8-16 Locknut
2	50014	Spanner Wrench
3	k370001	3/8 Flat Washer
4	B378001	3/8-16 x 5.00 Hex Head Cap Screw
5	55124	Rear Roller Raised Support
6	H250802	1/4" x 1/2" Roll Pin
7	09394	1/4-20 2-prong Knob
8	C190320	#10-24 x 3/16 Socket Head Setscrew
9	3708845	3/4 Wide x 1/4 Thick Diamond Dresser
10	55122	Dresser Support Block
11	55580	Dresser Support Weldment
12	6509588	T-Knob Assembly
14	R000377	Sq Key 3/16 x .75
15	C250620	1/4-20 x 3/8 Cup Point Set Screw
16	3709073	Retaining Ring
17	3709584	Flange Coupler .625 Bore
18	6009051	Drive Adapter 1/2 sq 3.5 Lg
19	6009052	Adapter
20	6009217	Driver Coupler Adapter
21	6009598	Tee Knob Assembly 1/4-20 x .50
22	3709585	Sleeve Coupler

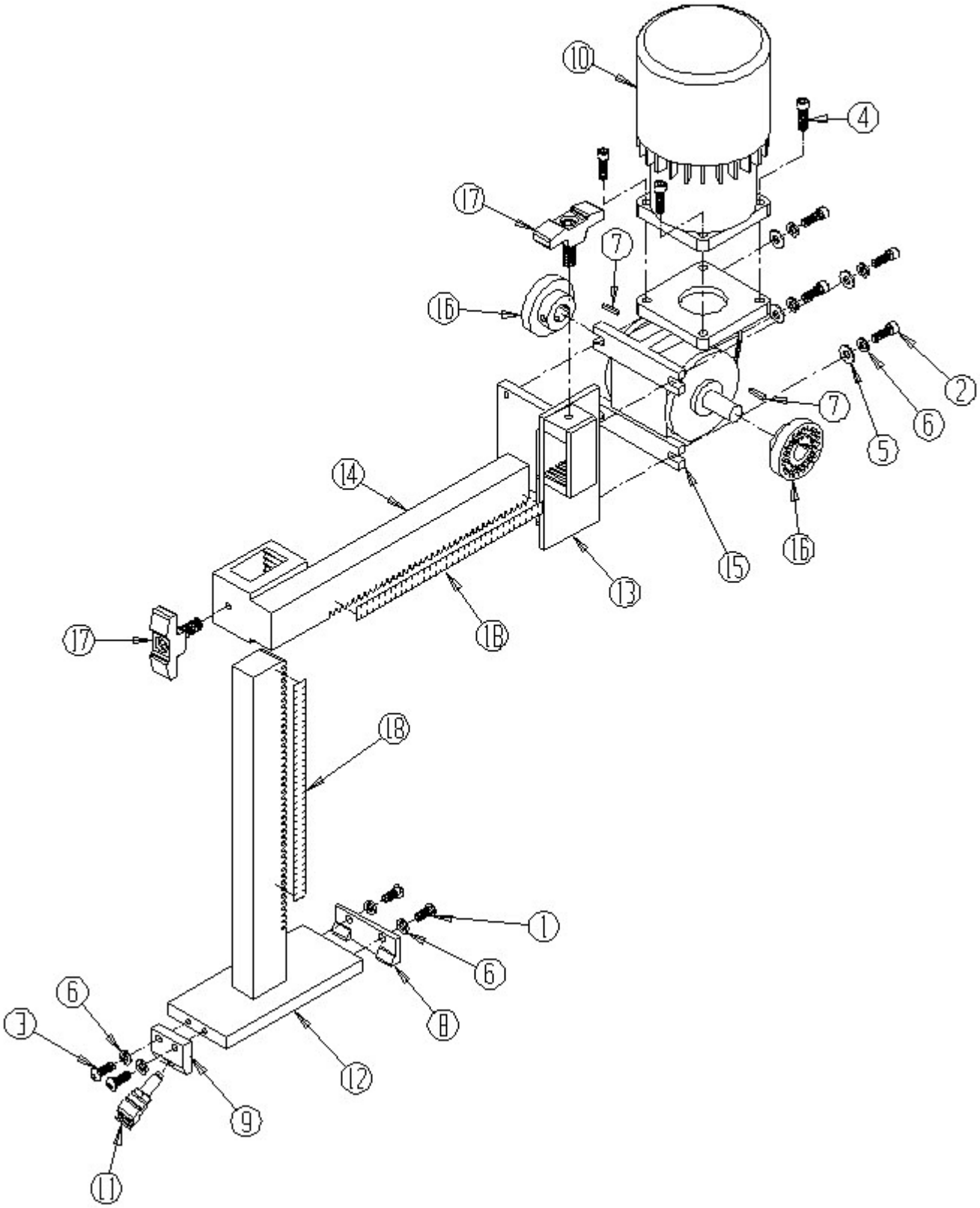
EXPLODED VIEW: 55571 ALIGNMENT GAGE ASSEMBLY



PARTS LIST: 55571 ALIGNMENT GAGE ASSEMBLY

DIAGRAM NUMBER	PART NUMBER	DESCRIPTION
1	B120611	5-40 x .38 Socket Head Cap Screw
2	B161011	8-32 x 5/8 Socket Head Cap Screw
3	B251016	1/4-20 x 5/8 Button Head Socket Cap Screw
4	B251216	1/4-20 x 3/4 Button Head Socket Cap Screw
5	B252001	1/4-20 x 1-1/4 Hex Head Cap Screw
6	J161000	8-32 Hex nut
7	K121501	#5 Lockwasher Split
8	K161501	#8 Lockwasher Split
9	K251501	1/4 Lockwasher Split
10	50290	Front Clamp Plate
11	50291	Clamp Block
12	50570	T-Knob Assembly 3/8-16 x .75 Dog Point
13	50586	Gage Base Weldment
14	50597	Gage Bar Assembly Vertical
15	3529069	Spacer .25 ID x .375 OD x .69 L
16	6509418	Pivot Plate Machined
17	6509349	Retainer Plate
19	6509359	Digital Gage Machined
20	H060302	Roll Pin .063 D x .188 L
21	3708813	T-Knob Assembly 1.25 Lg
22	6509412	Indicator Base Weldment
23	6509567	Knob Assembly T 1.5 3/8-16 x 2.25
24	6509501	T-Knob Assembly 3.0 Lg

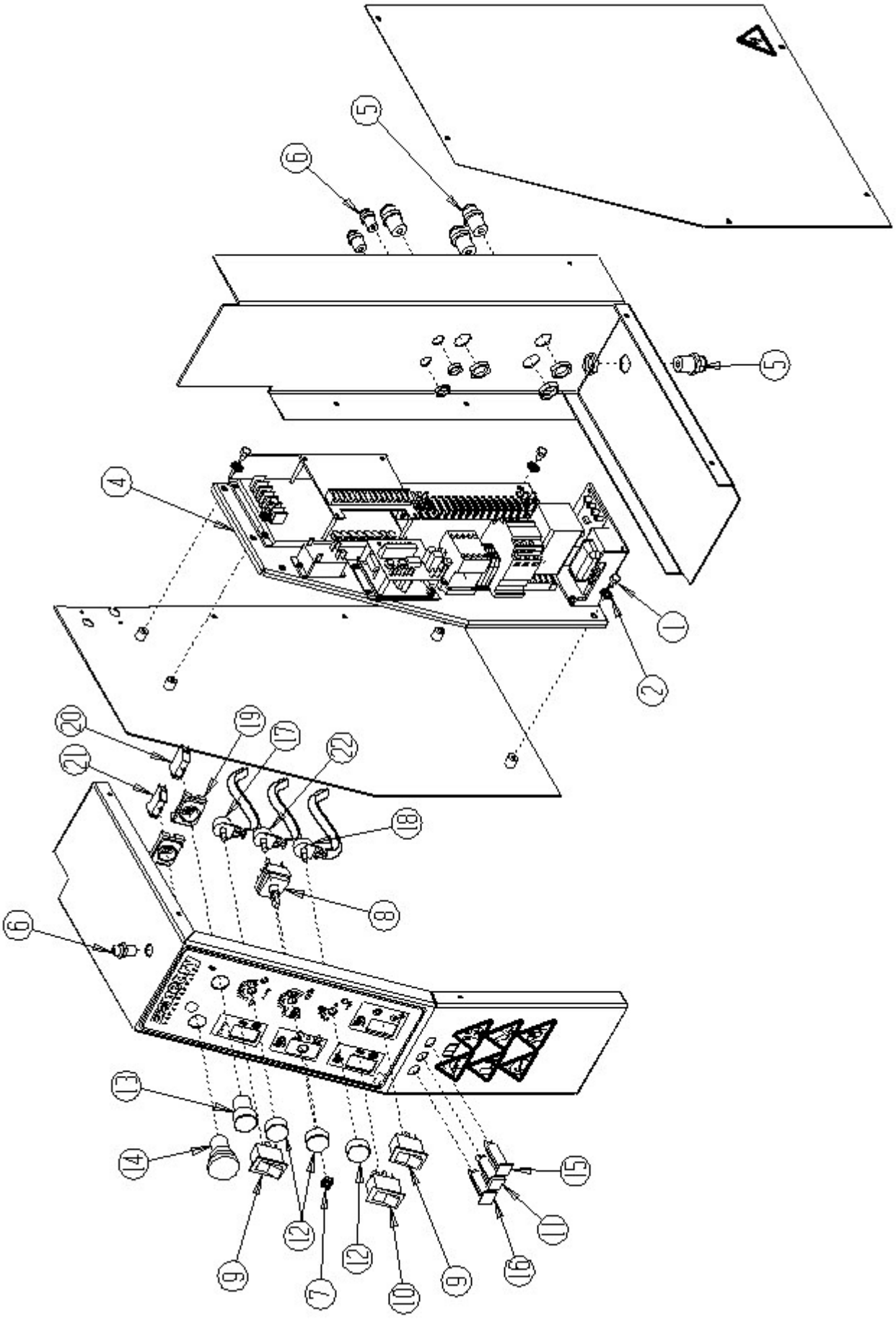
EXPLODED VIEW: 55564 SPIN DRIVE ASSEMBLY



PARTS LIST: 55564 SPIN DRIVE ASSEMBLY

DIAGRAM NUMBER	PART NUMBER	DESCRIPTION
1	B251016	1/4-20 x 5/8 Button Head Socket Cap Screw
2	B251211	1/4-20 x 3/4 Socket Head Cap Screw
3	B251216	1/4-20 x 3/4 Button Head Socket Cap Screw
4	B251411	1/4-20 x 7/8 Socket Head Cap Screw
5	K250001	Flat Washer 1/4
6	K251501	1/4 Lockwasher Split
7	R000376	Sq Key 1/8 x .75
8	50290	Front Clamp Plate
9	50291	Clamp Block
10	50362	Motor Spin Assembly Spin W13
11	50570	T-Knob Assembly 3/8-16 x .75 Dog Point
12	50585	Spin Mount Weldment Vertical
13	50595	Spin Arm Weldment
14	55514	Spin Arm Weldment Horizontal
15	3708391	Reducer 10:1 Ratio
16	3709586	Flange Coupler .50 Bore
17	6509588	Knob Assembly T 2.5 3/8-16 x 1.00L
18	6509129	Decal - Scale
19	3707623	DC Motor Brush (not shown)

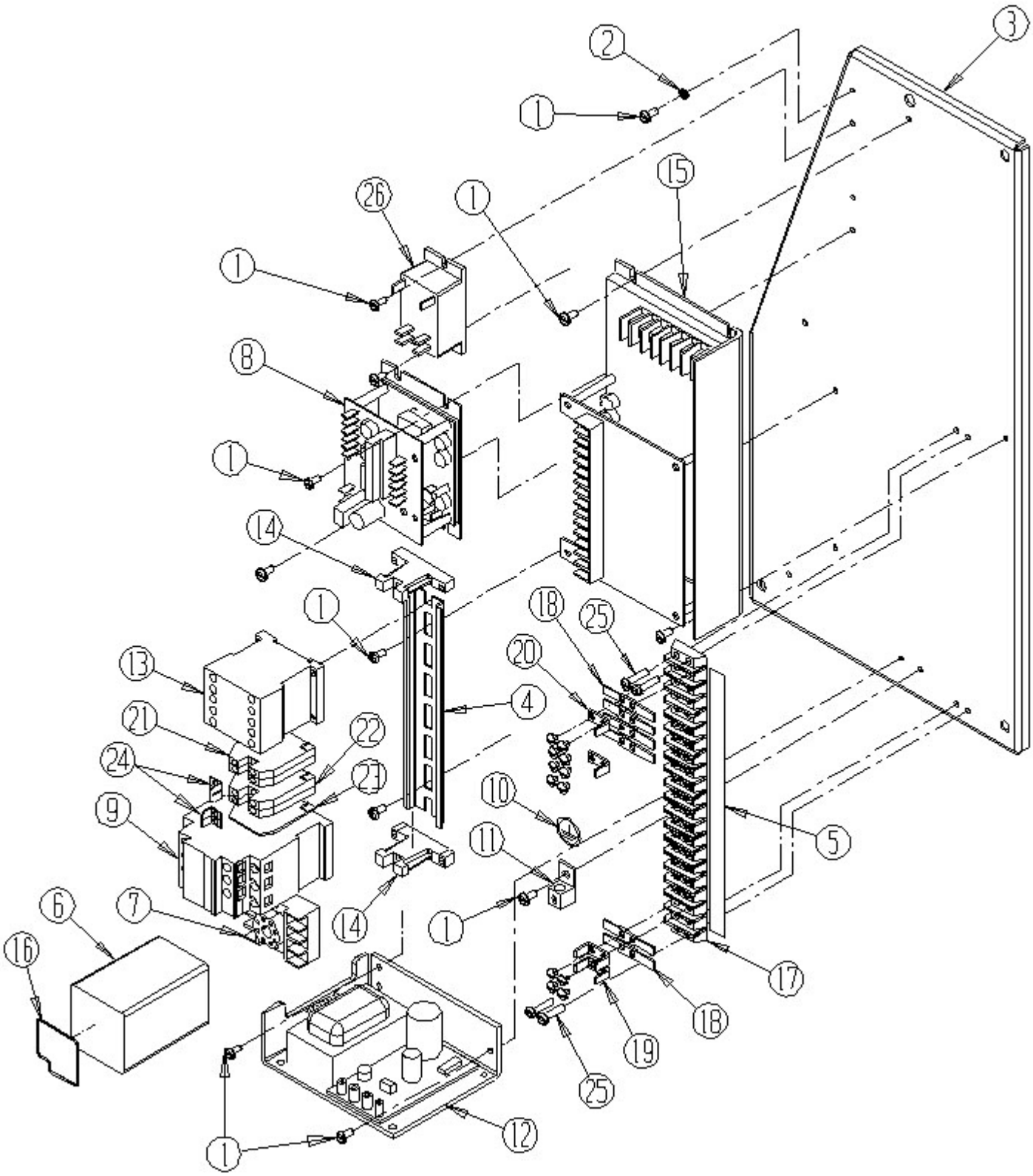
EXPLODED VIEW: 55587 CONTROL PANEL ASSEMBLY



PARTS LIST: 55587 CONTROL PANEL ASSEMBLY

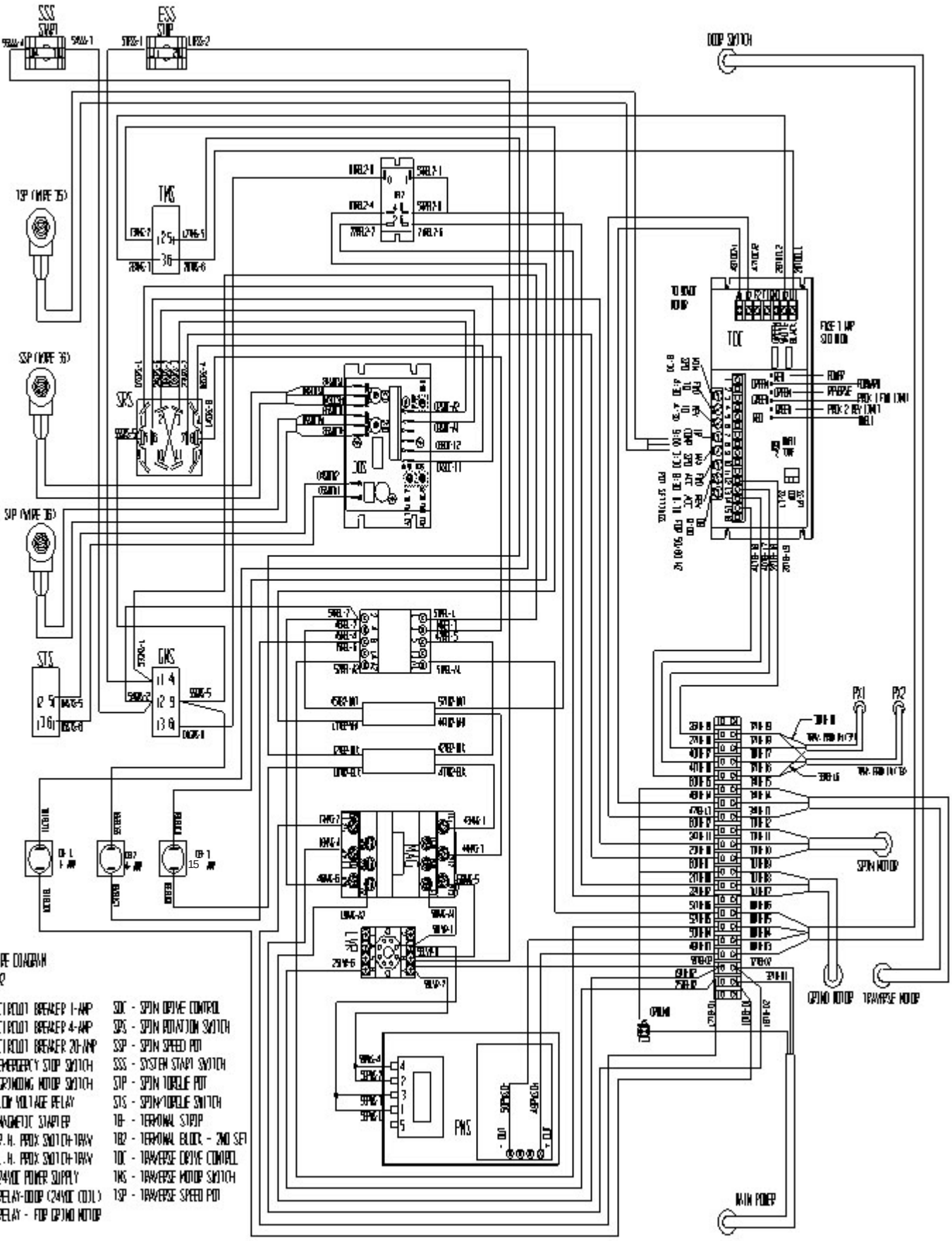
DIAGRAM NUMBER	PART NUMBER	DESCRIPTION
1	D250800	Threaded Screw Cutting 1/4-20 x 1/2 "F" HE
2	R000536	Lock Washer 1/4 Internal Teeth
4	55558	Electric Panel Sub Assembly
5	3707009	Strain Relief Liq T .24-.47W
6	3707029	Strain Relief Liq T .16-.31W
7	3707075	Toggle Switch Boot
8	3707080	Toggle Switch Hes/Rev
9	3707367	Rocker Switch On/Off
10	3707429	Rocker Switch On-Off
11	3707443	Circuit Breaker-4 Amp
12	3707446	Pot Knob W/Pointer
13	3707564	Green Start Push Button
14	3707567	Red Push-Pull Emergency Stop Button
15	3707542	Circuit Breaker-1 Amp
16	3707547	Circuit Breaker-15 Amp
17	6009199	Pot Assembly Traverse W35
18	6309066	Pot Assembly Spin
19	3707566	Switch Latch
20	3707565	Normaly Open Contact Block
21	3707568	Normaly Closed Contact Block
22	6309065	Pot Assembly Torque

EXPLODED VIEW: 55558 ELECTRIC PANEL SUB ASSEMBLY



PARTS LIST: 55558 ELECTRIC PANEL SUB ASSEMBLY

DIAGRAM NUMBER	PART NUMBER	DESCRIPTION
1	D160608	8-32 x 3/8 Pan Head Machine Screw
2	R000480	Lock Washer # 8 External Teeth
3	55145	Electrical Panel
4	55221	Terminal Block Assembly
5	55523	Din Rail Assembly
6	3707558	Volt Sensor Relay 100 VAC
7	3707073	8 Pin Socket
8	3707524	Spin Control Board
9	3707556	Starter Magnetic 1 HP
10	3707163	Primary Ground Decal
11	3707164	Ground Lug Primary
12	3707307	Power Supply 24 DC Modified
13	3707186	Square Contactor
14	3707705	Contact Block
15	3707550	Traverse Control Board 425 B
16	3708826	Low Voltage Warning Decal
17	3707706	Terminal Strip - 19 pole
18	3707707	Double Flat Spade For Term. Strip
19	3707708	Double 90° Spade For Term. Strip
20	3707709	Single 90° Spade for Term Strip
21	3707701	White Terminal Block
22	3707702	Grey Terminal Block
23	3707703	Terminal Block Cover
24	3707704	2-Pole Jumper for Terminal Block
25	D161266	8-32 x 3/4 Pan Head Machine Screw
26	3707447	Relay - DPST - 120 VAC Coil


SSS
SWP
ESS
SWP
DOOR SWITCH
TSP (WIRE 16)
TMS
SSP (WIRE 16)
SPS
SDC
TDC
SIP (WIRE 16)
STS
GMS
PX1
PX2
SPIN MOTOR
GRIND MOTOR
TRAVERSE MOTOR
MAIN POWER
SSD WIRE DIAGRAM
11-7-02
CB1 - CIRCUIT BREAKER 1-AMP
CB2 - CIRCUIT BREAKER 4-AMP
CB3 - CIRCUIT BREAKER 20-AMP
ESS - EMERGENCY STOP SWITCH
GMS - GRINDING MOTOR SWITCH
LVR - LOW VOLTAGE RELAY
MAG - MAGNETIC STARTER
PX1 - P.H. PROX SWITCH-TRAV
PX2 - L.H. PROX SWITCH-TRAV
PWS - 24VDC POWER SUPPLY
REL - RELAY-DOOR (24VDC COIL)
REL2- RELAY - FOR GRIND MOTOR
SDC - SPIN DRIVE CONTROL
SPS - SPIN POSITION SWITCH
SSP - SPIN SPEED POT
SSS - SYSTEM START SWITCH
STP - SPIN TOGGLE POT
STS - SPIN TOGGLE SWITCH
TB1 - TERMINAL STRIP
TB2 - TERMINAL BLOCK - 2ND SET
TDC - TRAVERSE DRIVE CONTROL
TMS - TRAVERSE MOTOR SWITCH
TSP - TRAVERSE SPEED POT

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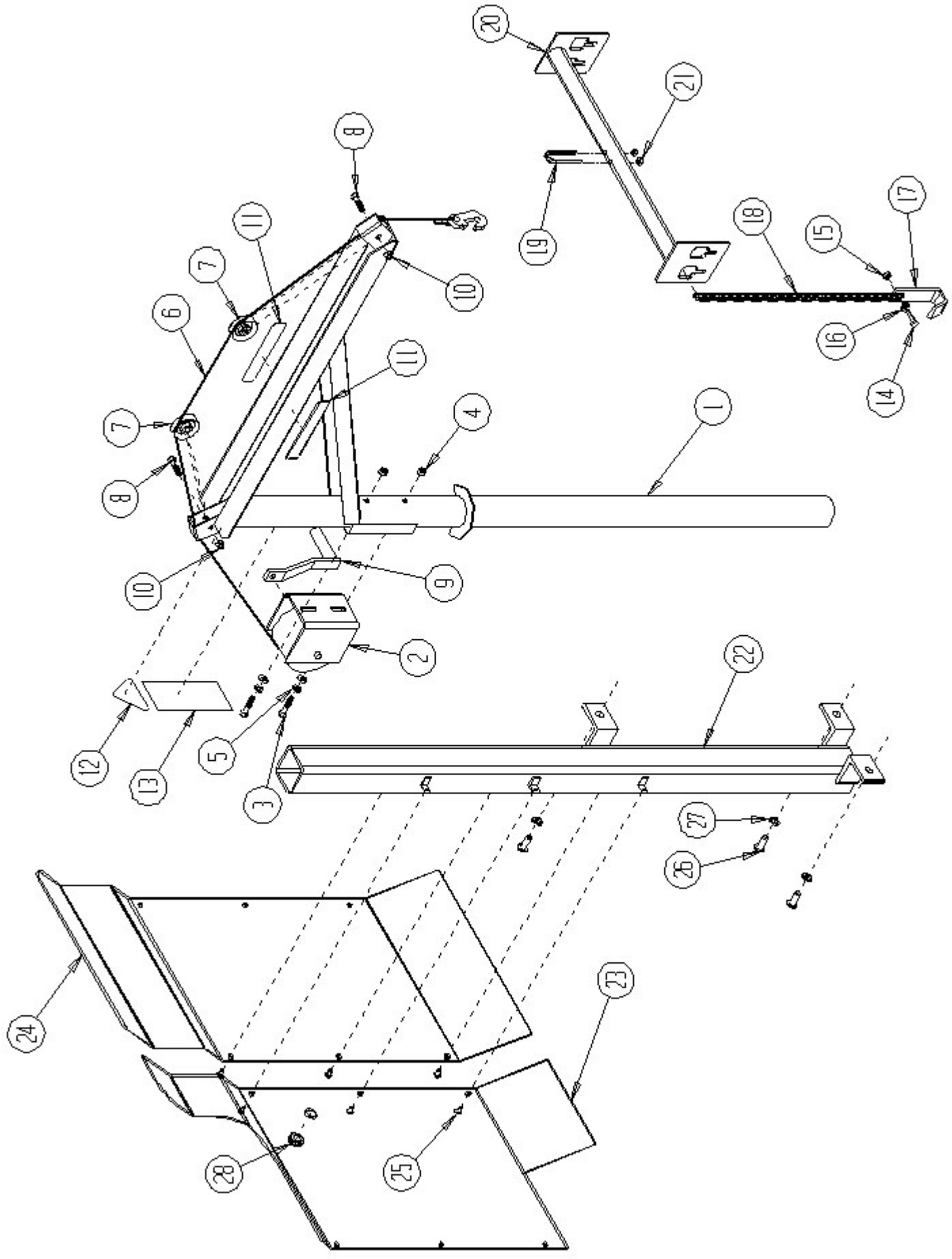
OPTIONAL WINCH & BOOM KIT (#55522)



OPTIONAL WINCH & BOOM KIT (#55522)

DIAGRAM NO.	PART NO.	DESCRIPTION
1	18566	Boom
2	3708578	Winch
3	B375601	Bolt, 3/8-16 x 3.5
4	J371000	Hex Nut
5	K371501	Lock Washer
6	3709407	Hook & Cable
7	3709795	Pulley
8	B372801	3/8-16 x 1.25 long Hex Head Cap Screw
9	3708647	7" Winch Handle
10	J377100	Locknut
11	6309036	400 Cap. Decal
12	3708456	Decal - Warning
13	6309037	Decal - Winch
14	B371601	Hex Head Cap Screw 3/8-16 x 1 Long
15	J377100	Nylok Locknut
16	K370001	3/8 Flat Washer
17	6009102	Grab Hook
18	6509113	Chain
19	3709316	U-Bolt
20	6509590	Spreader Bar Weldment
21	J317100	5/16-18 Locknut
22	50387	Boom Housing Weldment
23	50388	Panel-Guard Front
24	50390	Panel-Guard Rear
25	B310813	5/16-18 x 1/2 Button Head Socket Cap Screw
26	09297	1/2-13 x 1.25 Button Head Socket Cap Screw
27	K501501	1/2 Lockwasher
28	3708046	Grommet (Remove from old guarding)